Dental

Abstracts

a selection of world dental literature

AMERICAN DENTAL ASSOCIATION

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Dental Abstracts

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Lon W. Morrey, D.D.S., editor
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AMERICAN DENTAL ASSOCIATION

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2. To provide, by a few hours' reading each month, a survey of the significant advances being made by dentistry throughout the world, as reflected in current dental literature; and

3. To supply enough data in each abstract so that the reader may determine whether he wishes to refer to the original article for more complete information.

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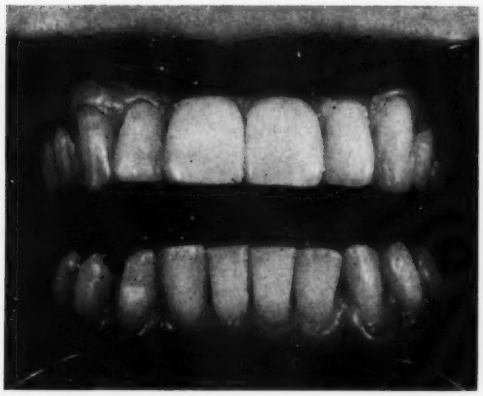

Figure 1 Left: Thirty year old patient with soft gold appliance in place. Right: Same patient after lower anterior teeth have been repositioned

Orthodontics and pedodontics

▼

Orthodontics

Repositioning and permanent retention of adult teeth

J. Bernard Hutcherson. *Ann.Den.* 16:12-15 March 1957

There is a place in general dental practice for the repositioning and permanent retention of position of adult teeth by orthodontic treatment, thus eliminating the necessity of cutting down good teeth for crowns because the teeth are rotated, malposed or poorly spaced. Adult teeth have been repositioned in a few instances, but retention of these teeth in proper position after treatment has been a problem.

It is possible to reposition adult teeth and retain that position in patients of any age up to 65 years, provided the patient is in good health. Except in complicated situations, repositioning requires only a few months, but a retainer must be used until the teeth become firm. The retainer is worn constantly for the first few months, after which it is worn only at night. Eventually it can be discarded in most instances.

A one piece casting is made of a special soft gold which allows many adjustments. On this casting are fingers, lingually and labially, by means of which adjustments are made to reposition the teeth. The appliance is held firmly in place with clasps on the second bicuspids and first molars, and by arms with clasps extending distally to include the second and third molars.

About 2 mm. of gold are fitted over the occlusal surfaces of the teeth from the first bicuspid to the third molar. This produces a splint effect and opens the bite. All posterior teeth must be included, in order to attain sufficient force to move the anterior teeth to the desired position. When molars and bicuspids are to be repositioned, extra fingers are added to the appliance.

Gratifying results have been obtained recently with the Hawley plastic and wire appliance; it is simple to construct and the bite is not opened. When the bite has been opened, the posterior teeth are depressed. As the treatment nears completion, the part of the splint over the second and third molars and the first bicuspids is removed, to allow these teeth to return to normal occlusion before the retainer is made and the orthodontic appliance removed.

Treatment must not be hurried; excessive pressure anteriorly, such as on a strong cuspid, may cause the clasped posterior teeth to move. Treatment is gradual. The fingers are adjusted with a

Figure 2 Left: Thirty year old patient before orthodontic treatment. Right: Same patient after repositioning. The space between the incisors has been closed, a jacket crown placed on the upper left lateral incisor and a bridge has replaced the upper right lateral incisor

small beaked pliers, and are moved a little less than a millimeter about twice a week. In uncomplicated instances, about three months are required for repositioning, after which the patient must wear a retainer at all times for at least another three months.

The retainer is a simple one piece casting. Usually it clasps the cuspids and first bicuspids with fingers to hold the treated teeth in position. When the retainer is inserted, the pressure should be on the molars and first bicuspids, so that the anterior teeth, or teeth that have been repositioned, can become firm and remain so.

The treatment appliance may be used as a retainer. In the upper teeth, an appliance of plastic and wire is most satisfactory; in the lower teeth, a cast appliance is used. The splint and most of the clasps are removed, and the occlusal part of the splint holding the clasped arms is ground as thin as possible. If teeth have been repositioned for prosthetic restoration, the bridge or partial denture will retain the teeth in their proper position.

Frequently, one or more repositioned teeth will fail to become firm in their new position. These teeth should be taken out of occlusion. After a month or two, if any of the teeth tend to return to their original position, they should be tested for and relieved of any occlusal interference.

If the retainer is tried in the mouth by the patient every few weeks and no unusual pressure is noted on any tooth, the patient can be confident that the teeth will never return to their original position.

Starks Building, Louisville, Ky.

The role of assumption in orthodontics

Harold Schwartz. *Angle Orthodont.* 27:119-123 July 1957

Many assumptions underlie the procedures of the orthodontist and determine and influence his actions. These assumptions are so firmly entrenched that they are accepted as true and real, when in fact some are arbitrary and may be vestiges of the thinking of a bygone age.

Among the assumptions held by many orthodontists are the following: that a normal occlusion of teeth as defined by Angle and G. V. Black can be imposed successfully on every orthodontic patient; that Nature is purposive and will develop a normal occlusion in an individual if allowed to operate unhampered on the morphogenetic pattern of that individual; that current concepts of beauty are other than culturally determined stereotypes, and that there exists a morphogenetic pattern which imposes limitations on the efforts of the orthodontist.

Many of the concepts and basic principles held by the orthodontist are arbitrary and unscientific. The orthodontist is governed by basic assumptions which he formulates as theoretical guiding prin-

ciples. These assumptions are tested by being used as a basis for treatment in the management of patients. Assumptions found to be unsuitable are modified or replaced by others. The process is continuous and never finished. It is the method of science.

The orthodontist should fashion a set of postulates to guide him in his work. Among such postulates are the following:

1. Above all, injury to the tissues must be avoided.
2. Stability of result is a major objective.
3. The dominance of the morphogenetic pattern must be recognized, and any configuration imposed on the dentition should be within the limitations of the individual's pattern.
4. Until a better method is suggested, the teeth should be placed so that the upper and lower first molars occlude in the Class I Angle's position. Other details, such as arch form, degree of overbite and overjet and axial inclinations, should depend on the orthodontist's estimate of individual variation.

The orthodontist should become aware of his assumptions.

55 East Washington Street, Chicago, Ill.

▼ Growth and development

Premature loss of deciduous teeth

B. R. Townend. *Brit.D.J.* 103:6-11 July 2, 1957

It has for years been an article of dogma in orthodontics that premature loss of deciduous teeth is a direct and basic cause of malocclusion. It does not always follow that because a majority of people believe a thing that it is necessarily true. The passionate devotion to the conservation of deciduous teeth as a cure-all for a large amount of malocclusion well may be one of those erroneous beliefs passed down from one authority to another but be one which was wrong to start with.

A lot of the misapprehension regarding the problem seems to arise from the belief that the growth and development of the jaws are influenced and conditioned by the presence of teeth. Londström (1955) states: "The early loss of deciduous teeth has no general influence on the development of the dentition. In spite of extensive and extremely early loss the end result may be normal."

Genetic influences play the major role in conditioning the development and final pattern of the dentition. In instances of anodontia, spacious bony arches of excellent proportions are found frequently which have grown to their individual shapes and sizes in the complete absence of stimulation from the development and presence of teeth. The only portion of such arches which is defective is, as one would expect, the alveolar bone.

Two essential prerequisites of a normal dentition are that the growth, development and eruption of the teeth should be in step with the growth and development of the jaws and that there should be a quantitative balance between these two tissues.

Although it would be unrealistic to assert that early loss of deciduous teeth is not a factor in the production of a malocclusion, such early loss does not appear to be a prime or basic factor. It merely seems, in many instances, to alter the characteristics of a malocclusion the seeds of which are present from the start. If there is a basic and inherited tendency toward normality in the dentition of a child, it matters little whether the deciduous teeth are lost or retained, normality will be achieved.

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Prosthetic dentistry

▼

Partial dentures

Removable lower partial denture with precision attachments

(Kombinationsprothese im Unterkiefer mit Geschieben und Biaggi-Gelenken)

Gerhard Geiger. *Zahnärztl.Praxis* 7:9
Aug. 1, 1956

The term "precision attachment," used frequently in dental literature, is a misleading designation because it suggests a special device for retaining the denture in a precise position. In fact, it is only one of several items used in present-day design and in the construction of several types of dentures. This term may also imply that only dentures to which these so-called precision attachments are attached possess properties in fit and adjustment that are lacking in other dentures. Such a term also seems to signify that this type of attachment is superior to all others. As a matter of fact, all dentures and attachments must be precision-made.

The requirements for a successful removable lower partial denture in which Biaggi's resilience joint is used are as follows: (1) the masticatory stress must be sustained by the mucous membrane of the edentulous region, and the abutment teeth should function only to retain the denture in position and to act as a checking factor when the mucosa has been displaced to its limit; (2) the denture must be simple but rugged enough to withstand stress without being distorted, bent, broken or misaligned; (3) the method of retention must not destroy the abutment teeth through abrasion or carious lesions; (4) the attachments must include possibilities for extension, and (5) the material used must be chemically inert, strong and elastic.

Case 1. In the patient's mandible, all incisors were missing. In the upper jaw, the construction of a simple denture base without complicated anchorage or supporting attachment provided the desired correction. In the lower jaw, however, a similar procedure would not obtain adequate results. Rehabilitation was achieved by making deep cuts into the undercut region of the removable partial denture and by adding a precision attachment (Biaggi's resilience joint).

Case 2. In the patient's mandible, both central incisors and the right lateral incisor were missing. The alveolar margins around all anterior teeth showed decay, probably caused by the wearing of a faulty denture. The toothless anterior region was provided with a removable lower partial denture to which a precision attachment was added. The free-end saddles were joined to the main part of the denture by both the Biaggi's resilience joint and a transversal wire bow. The bicuspids were prepared for the attachment crowns which were cut from 2 mm. copper bands. Adequate space between the occlusal surfaces had to be secured because Steiger's retainer with occlusal pivots was used. The left lateral incisor was provided with a root cap. The crowns were designed in their natural anatomic form, and with the help of a parallelometer, the grooves and shoulders were worked in. After construction of the splints for Steiger's attachment, temporary pivots were set which had a smaller diameter than the platinum-iridium pivots which were used later. After completion of the cast, the temporary pivots were eliminated and replaced by permanent pivots.

On the completed working model, the unfinished crowns were positioned and a new cast made from a silicone rubber impression. The attachment parts and the combining elements then were added and the different anchorages connected and strengthened with combining stress-breakers.

Both Steiger's precision retainer and Biaggi's resilience joint are difficult to construct. A full mouth impression has to be taken and hard stone casts made which are mounted on articulators.

After a survey of the individual oral condition, it must be determined how the stress can be minimized by adding properly positioned pre-

Figure 1 Instance for a removable lower partial denture with precision attachments

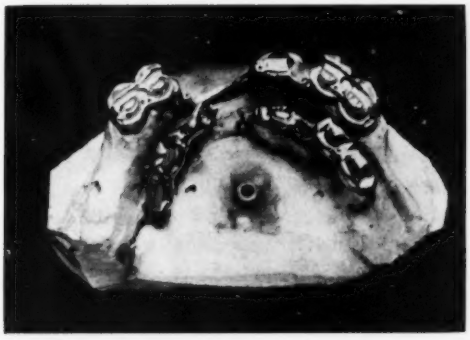

Figure 2 Abutments and Steiger's retainers

Figure 3 Biaggi's resilience joint

Figure 4 Lateral view of the denture

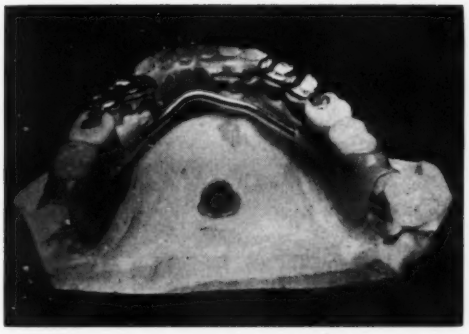

Figure 5 Lingual view of the denture

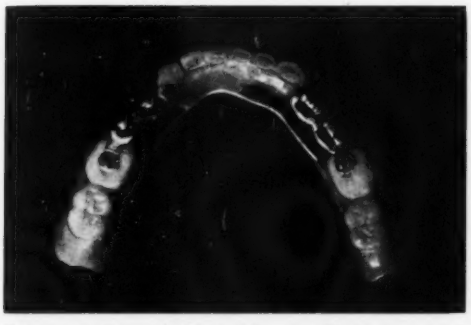

Figure 6 Properly designed removable lower partial denture with two precision attachments

cision attachments to the removable lower partial denture.

The cavity can be prepared in the customary manner, but the abutment teeth must be deeply cut to fit the selected precision attachment. The attachment boxes have to be paralleled and waxed in and the contour of the proposed abutments imitated in inlay wax.

The proper angle of the pulpal wall of the cavity has to be determined, and the lateral extent of the preparation adjusted. The indirect technic should be used and copper amalgam dies employed. The finished removable lower partial denture and its precision attachment must be able to withstand rough manipulation, especially swaging, without breaking.

When the precision attachment is selected carefully, future adjustment rarely will be necessary.

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The importance of bracing in partial denture planning

G. B. Shillington. *J.Canad.D.A.* 22:699-704 Dec. 1956

The three principles involved in planning and designing any partial denture are retention, support and bracing. Retention and support are generally adequate.

Bracing is the resistance developed to movement of the appliance in a horizontal plane. Forces applied against a tooth from a lateral direction are those most likely to cause periodontal disturbances with subsequent loosening of the tooth in the alveolus. Only by distributing the lateral forces over as many of the remaining teeth as possible can lateral forces be reduced on individual teeth. The most effective method appears to be to contact as many teeth as possible with reciprocal arms of clasps and minor connectors, and to use rigid major connectors to unify the various parts of the partial denture framework.

Rarely is it necessary that both clasp arms be retentive. If the buccal arm is retentive, the lingual arm can be made rigid.

Royal Canadian Dental Corps, Western Command, Edmonton, Alberta, Canada

▼

Complete dentures

Geriatrics and tissue changes: problem of the aging denture patient

Sol Silverman, Jr. *J.California D.A. & Nevada D.Soc.* 33:194-197 May-June 1957

More than a third of the American people are above the age of 45. Nearly 13,000,000 people, or more than 8 per cent of the population, exceed the age of 65. This trend affects the prosthodontist in two ways: (1) an increasing number of people require prostheses, and (2) aging affects the tolerance or adaptability of the patient to these appliances. Of primary importance to the prosthodontist are the effects of degenerative changes on the oral cavity.

The most important tissue to the prosthodontist is bone. If bone could be kept in equilibrium, the problem of maintaining dentures in function would be diminished. In senescence, however, anabolism decreases whereas catabolism slightly increases, laying the groundwork for a dynamic change. Production of matrix is further impaired by a diet usually low in protein. The calcium content of bone may decrease with age.

The main change in connective tissue that forms the cushion between epithelium and bone is an increasing fibrosis. This, with altered metabolism, causes an increased susceptibility to trauma and a decreased power of repair.

The epithelial tissue gradually loses its capacity for growth and repair, and becomes increasingly susceptible to irritations in the form of hyperplasias, ulcerations and keratoses. The most dangerous problem associated with epithelial change in the aging patient is the increasing incidence of oral cancer which accounts for about 4 per cent of all cancers. The high incidence of cancerous lesions around denture peripheries always brings forward the speculation of irritation as an etiologic factor.

The signs and symptoms of senescence generally are subclinical except for the physical characteristics of chronologic aging.

Careful examination and screening procedures should be carried out. The dentist cannot over-

look the mounting number and variety of psychiatric problems related to dentures. These often do not come to light until the denture is delivered. Patience and understanding on the part of the dentist are the first steps in treatment. The use of sedatives and analgesics, ointments, sialogogues and local anesthetic injections often aid during periods of tension and dissatisfaction. Many persons feel much better after extra vitamin and mineral intake, even though a dietary analysis may not reveal the need for this supplementation.

595 Buckingham Way, San Francisco, Calif.

Denture sore mouth and angular cheilitis: a preliminary investigation into their possible association with Candida infection

D. G. Lyon and A. O. Chick. *D.Practitioner* 7:212-217 April 1957

A certain type of soreness under dentures has been a recurring problem to both dental and medical practitioners. It used to be referred to as "rubber sore mouth" and today often is erroneously diagnosed as "acrylic sensitivity," although patch tests are nearly always negative.

The possibility of denture sore mouth being associated with infection by the fungus Candida (as has been mentioned by a number of workers) was investigated.

In 36 patients with denture sore mouth, the palates were swabbed and the organisms grown; Candida was cultured in 72 per cent. In 24 control patients, Candida could be cultured in only 17 per cent.

Keeney (1946) successfully used a fatty acid fungicide, sodium caprylate, to treat oral and vaginal thrush. It was decided to test the efficiency of this substance. A sodium caprylate jelly was formulated with the following ingredients: sodium alginate, 4 per cent; sodium caprylate, 10 per cent; glycerine, 20 per cent; carboxyl methyl cellulose, 1 per cent; sorlate, 1 per cent, and aqua, ad 100. This jelly is fungicidal, nonstaining, and can be applied easily to the affected region by being smeared on the fitting surface of the denture. It has the disadvantage of causing a burning sensation when first applied, but this quickly passes, and only one patient could not tolerate it.

At night the dentures were immersed in 5 per cent cetrimide.

Patients who did not respond to the caprylate jelly did respond to treatment with a nonstaining fuchsonium compound closely allied to gentian violet.

Of the 36 patients, 15 were cured, 7 showed improvement, 1 showed no improvement and 13 defaulted. Thus, treatment with fungicide brought about cure or improvement in all but one patient. This indicated that Candida infection could be viewed as partly, if not wholly, responsible for denture sore mouth.

Thirty-three per cent of the patients had angular cheilitis. This is a much higher incidence than is normal among denture wearers. It was concluded that angular cheilitis must be regarded as another manifestation of denture sore mouth associated with Candida infection. All the instances of angular cheilitis in this series cleared up when the denture sore mouth was treated successfully. Some were given a simple analgesic ointment, others had no treatment whatever, but all were either healed or healing before new dentures were made.

As a result of the antifungal treatment, edema subsided and the dentures became increasingly loose; in 80 per cent of the patients, new dentures were provided. Some patients, however, were cured completely while wearing their original dentures.

It is highly probable that the denture may be a source of reinfection. In several instances a more profuse growth of Candida was obtained from the denture than from the mouth, and in two instances positive cultures were obtained from the denture when the mouth was negative.

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Periodontics and endodontics

▼

Endodontics

Combined surgical and conservative treatment of focal infections in the apical region

(Chirurgisch-konservierende Behandlungsmethode apikaler Herde)

L. Castagnola and J. Alban. *Deut.Zahnärztebl.* 10:151-154 March 8, 1957

Ten years ago, Walkoff and Schröder recommended the so-called "ventilation" therapy as the method of choice for treatment of focal infection in the apical region. This treatment method which combines surgical with conservative procedures successfully replaces apicectomy.

Similarly, Temple, Stuart, and Cartin (U.S.A.), Roy (France), Schoen (Germany), Müller, and the authors (Switzerland) have reported favorable results obtained with this method.

Discharge of pus through the artificial ventilation usually achieves immediate relief, especially in instances in which apicectomy is contraindicated because of unfavorable anatomic conditions.

The clinical indications for use of ventilation therapy, almost identical with indications for apicectomy, are as follows: (1) when the prognosis for root canal treatment is unfavorable; (2) when previous conservative treatment was unsuccessful in checking painful reactions and the forming of new accumulations of exudates and pus; (3) when foci of infection have reached the apical or periapical regions; (4) when a parulis or other inflammatory infection is present in the subperiosteal region of the gingiva, and (5) when periapical granuloma is present in which apicectomy would cause severe loss to bone or tooth (root) structures.

Clinical evidence has proved that ventilation therapy is applicable in all instances in which the center of the morbid process lies in the region of the anterior teeth. Other treatment technics frequently injure the pulp and the periapical tissue and, therefore, are contraindicated in bicuspids and molars.

Prior to surgical intervention, roentgenograms are taken to evaluate the position of the focus and its relation to surrounding regions, such as the maxillary sinus, the nasal fossa, the mandibular nerve and the neighboring teeth.

Surgery is performed in two stages:

1. The root canal is opened and the passage freed to the apex. Overinstrumentation should be avoided because it is easy to force bacteria and toxic materials through the apex. After the surgically produced ventilation, the root canal is rinsed with nonirritating germicides (calcium hydroxide solution). The root canal is temporarily sealed with zinc oxide-eugenol and covered with a dressing soaked in camphorated parachlorophenol.

2. Under local anesthesia, the inflamed periapical region is reduced. A short incision (about two thirds of an inch) is made into the gingiva to gain access to the center of the focal infection. The alveolar bone is pierced with a rose bur (size 8) at the site of the atrophy where the mucosal layers lie flabbily over the softened cortex. The apical region is made accessible without tearing the surrounding tissue. The dental focus is eliminated by scraping and the granulated tissue removed. After the focus of infection has been eliminated, the root canal is sterilized with a syringe filled with an antiseptic bismuth compound through the apex to the former site of the focus and the ventilation "window." Widening of the root canal with an appropriate bur is recommended. Before suturing, all remains of detritus, blood and secretion must be eliminated.

Complete drying of the root canal is followed by filling with silicate cement until the excess material appears at the orifice of the window. The cavity then has to be cleaned of filling material to avoid postoperative discoloration of the crown. Roentgenograms are taken to evaluate the continuity and exactness of the root canal filling.

In postoperative examinations, made from one and a half to two years after treatment, the regeneration of hard and soft tissues is observed.

Figure 1 Complete filling of the root canal, reaching the site of the eliminated focus and the orifice of the artificial ventilation

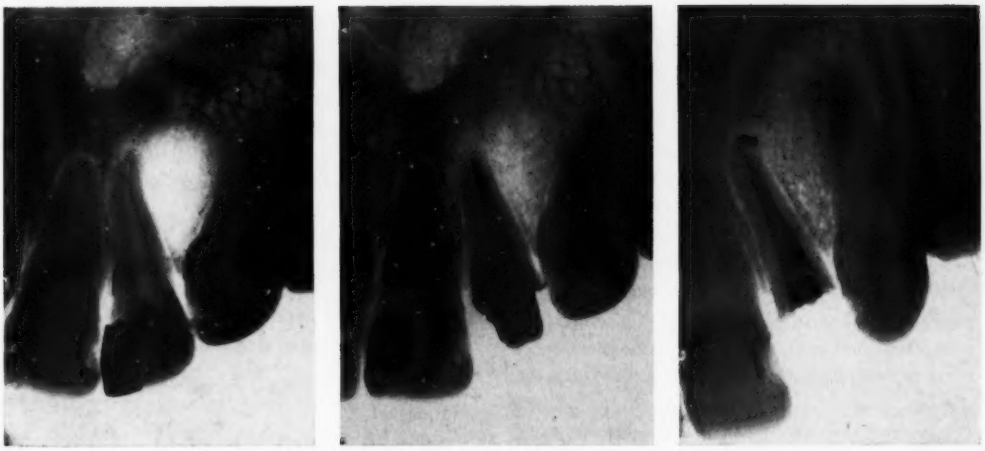

Figure 2 Left: Before treatment. Center: Three months after treatment. Right: One and a half years after treatment

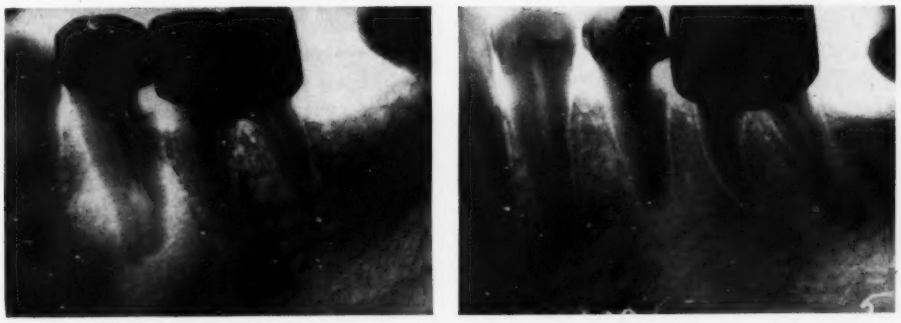

Figure 3 Left: Before treatment. Right: One and a half years after treatment

In the majority of instances treated with ventilation therapy, neither unfavorable complications nor relapses occur. Other advantages of this combined surgical and conservative treatment are: (1) minimum loss of bone; (2) small cicatrix in the gingiva, and (3) immense saving of time in surgical and endodontic procedures.

In Europe, the majority of dentists and oral surgeons prefer ventilation therapy to apicectomy.

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▼ Periodontics

Alkaline phosphatase activity in gingiva of the ferret

P. H. Staple. *Brit.D.J.* 102:305-310 April 16, 1957

It has been claimed on morphological grounds that the periodontal structures of the ferret, both in health and in reactions to various pathogenic agents, closely resemble those of man, whence it has been asserted that the pathogenesis of gingival disease in the two species is essentially similar. In view of these claims it seemed important to find out whether histochemical reactions of the gingivae in the two species were similar.

Eleven male and six female ferrets were used. In the majority of animals, the buccal marginal gingiva in the region of the upper fourth premolars was taken for examination.

With sodium glycerophosphate and sodium naphthyl phosphate as substrates, alkaline phosphatase activity was studied in paraffin sections of biopsy specimens of ferret gingivae. Tissues were fixed in ethanol or frozen-dried. All stages in the transition from clinical normal to chronic marginal gingivitis were studied, the gingival condition being assessed by clinical examinations and capillary microscopy *in vivo*.

Clinically normal gingiva displays alkaline phosphatase activity only in the gingival and crevicular epithelia; there is only slight activity in the lamina propria. Inflamed gingiva displays a pronounced increase in alkaline phosphatase activity throughout the gingival and crevicular epithelia; in the lamina propria this increase is slight. In the epithelia, alkaline phosphatase activity is present in the cytoplasm and is also found extracellularly, closely associated with the intercellular bridges.

In man, alkaline phosphatase activity, with glycerophosphate as substrate, is confined normally to a few scattered sites in the lamina propria, namely, the endothelium of the smaller vessels, some fibroblasts and some reticular and collagenous fibers. In inflammatory conditions of the gingivae, alkaline phosphatase activity in these structures is increased, but the gingival and crevicular epithelia continue to give a negative reaction.

The distribution of alkaline phosphatase activity in the gingiva of the ferret differs strikingly from that in man; hence, in the absence of more comprehensive comparative histochemical studies, previous statements about the similarity of the pathogenesis of gingival disease in the two species must be subject to reservation.

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Experimental production of periodontitis in dogs

C. Kenneth Collings. *J.Periodont.* 28:7-11 Jan. 1957

A technic is described for producing periodontitis in experimental animals which simulates periodontitis in man. The method is simple and has been successful, over a period of six years, on every animal used which survived long enough for periodontitis to develop.

The dog was anesthetized. The gingiva around the premolars and first molars on both the right and left sides of the mandible was reflected away from the teeth and from the supporting bone on the buccal and lingual surfaces. With a mallet and chisel, about 2 to 3 mm. of the crestal marginal alveolar bone was removed buccally and lingually from both the right and left sides of the arch. A bone bur was used to remove the crest of bone between the roots of the teeth. The soft

tissue was replaced and held in position by cotton thread sutures between and around the teeth. Precautions were taken to prevent the animal from tearing the sutures from the soft tissues.

Roentgenograms made after 2, 5, 7 and 12 weeks showed a progressive deterioration of the crest of the alveolar bone with the customary signs of bone loss as seen in instances of advanced periodontitis in the human. Clinical observations at 7 and 12 weeks showed that an acute gingivitis had developed. A periodontal probe could be introduced into periodontal pockets up to 5 mm., and finger pressure on the outside of the pocket region expressed a creamy, purulent-appearing fluid.

Thirteen months later the mouth had a foul smell, and the periodontal breakdown had proceeded further. Roentgenograms showed extensive bone loss, and both mandibular first molars were carious. The involved teeth were mobile. The dog is living four years and eight months after the experiment was started. Four other dogs had similar surgery performed in early 1953 and two more in early 1956. Five of these six animals are still living. In each the same sequelae occurred, with minor variations. All the dogs have periodontitis ranging in severity according to the time since the surgery was performed.

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Preliminary progress report of a clinical study of the effect of C.V.P. on gingival hemorrhage

Harry Roth, Henry Greene and Sanford Kirsch. *Oral Surg.,Oral Med.& Oral Path.* 10:590-600 June 1957

Gingival hemorrhage, one of the cardinal symptoms of periodontal disease, may be caused by factors other than vitamin deficiency. The loss of capillary integrity, however, which facilitates gingival bleeding, may be aided by a specific vitamin supplementation. A preliminary study was undertaken to determine the effect of citrus bioflavonoid (C.V.P.), 100 mg., to which 100 mg. of vitamin C was added.

Twenty-five patients were divided into three groups. Nine patients received six C.V.P. capsules daily. Eight patients received six placebo capsules daily, and eight received no capsules and acted as controls. All patients were examined biweekly for at least three months.

Salutary response was noted in eight of the nine patients receiving six capsules of C.V.P. daily, in that the bleeding tendency was diminished. This was in contrast to five of eight patients receiving six placebo capsules daily who showed no improvement, and five of eight patients in the control group who showed no improvement.

The results do not imply that a lack of ascorbic acid or of bioflavonoids is the only factor involved in hemorrhagic gingivitis. There is a need for a more objective clinical evaluation, other than those criteria used in this preliminary experiment. A larger group, with a more equable distribution as to age and sex, should be tested.

The results of this study indicate that the use of ascorbic acid with bioflavonoids may be of some supportive value in patients with gingival hemorrhage.

College of Dentistry, New York University, New York, N.Y.

Effect of silicate cement and amalgam on the gingiva

H. A. Zander. *J.A.D.A.* 55:11-15 July 1957

A study was made to compare the gingival reaction to self-curing acrylic materials, to silicate cement and to amalgam.

Twenty cavities were prepared in the gingival third of the buccal surfaces of monkeys' teeth and extended up to 3 mm. beneath the crest of the gingival tissues. Eight cavities were filled with amalgam, eight with silicate and four with self-curing acrylic resin. One half of the restorations were highly polished one week after insertion, whereas the other half were just finished down with fine garnet disks and left unpolished. The restorations remained in place for three months. Specimens were obtained of the teeth together with surrounding periodontal tissue, and were studied histologically.

The effect of silicate cement and of amalgam on the adjacent gingival tissues was characterized by a severe inflammatory reaction. The reaction

of the gingival tissues to these two filling materials is similar to that seen to calculus.

Clinical observations of a chronic inflammatory reaction of the gingival tissues around restorations are confirmed by the present investigation. There is no doubt that not only dental calculus but the materials used in restorative dentistry may be a contributing factor in gingival disease.

Silicate cement, amalgam and acrylic restorations all produce a chronic inflammation, with possibly a lesser response to the acrylic resin. An overhang or underhang of 0.2 mm. is not detectable with the clinical instruments used in dental practice, and the act of polishing or finishing a restoration will create such a discrepancy. No differences were apparent between the gingival reaction to the polished restorations and the reactions to finishing with garnet disks only.

Dental School, University of Minnesota, Minneapolis, Minn.

Gingivitis in young adult males: lack of effectiveness of a permissive program of toothbrushing

Maury Massler, Henry M. Rosenberg, William Carter and Isaac Schour. *J.Periodont.* 28:111-124 April 1957

The effects of a permissive, nonsupervised program of toothbrushing on gingival inflammations and on the cleanliness of the enamel and the gingiva were studied in a group of 154 young men 17 to 22 years old who were recent inductees at the Great Lakes Naval Training Center. Each man was given a toothbrush and dentifrice. After a brief group demonstration of how to brush the teeth, the subjects were instructed to brush their teeth on arising and after each meal. No further efforts were made to control the brushing. The effects were studied by means of clinical evaluation and standardized color photographs taken at 0, 10 and 15 weeks.

In contrast to the opinion expressed by Hiniker and Forscher (1954), it was felt that the rating of cleanliness and gingivitis was more exact and objective when made from the color photos than when attempted *in vivo*.

After 15 weeks of permissive toothbrushing, the following results were observed:

1. Only 17.5 per cent of the subjects showed improved cleanliness of the enamel and gingiva demonstrable in the color photographs. It was concluded that young men did not significantly alter their brushing habits when given a toothbrush and dentifrice and instructed to brush their teeth.

2. Only 9.7 per cent showed objective visual evidence of improved gingiva after 15 weeks.

3. Only 7 of the 27 men with improved oral hygiene showed improved gingiva, and only 7 of the 15 men with improved gingiva showed also improved hygiene. It was concluded that improved toothbrushing does not, of itself, always result in improved gingiva. Limiting factors may be the presence of calculus or crowding of the teeth.

Good color photographs taken before and after any therapeutic procedure are essential to the accurate, objective evaluation of the effect of such procedures on the enamel or gingiva. The PMA index is valuable in measuring quantitatively the amount of gingivitis or the amount of change in gingivitis, especially when used in conjunction with good color photographs.

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Reactive tooth positioning

Ira Franklin Ross. *Oral Surg,Oral Med. & Oral Path.* 10:725-734 July 1957

It has been noted that if single dental units are malposed, either through developmental aberrations or as a result of acquired factors, these units frequently will assume a more favorable position with the elimination of the disruptive influence. The term "reactive positioning" is proposed to describe this mechanism. This type of tooth movement is as indigenous to inherent tooth position in the arch as are the vertical movement of teeth in continuous eruption and the mesial movement of the teeth throughout life.

A classification is proposed to clarify the various types of tooth malposition and is based on etiological and spatial considerations.

The degree to which reactive repositioning of malaligned teeth may be anticipated is dependent on the following six considerations:

1. Occlusal trauma, as either a primary or secondary factor, must have contributed to the tooth malposition. Pocket formation with its concomitant exuberant granulation tissue formation also may be a factor in promoting pathologic tooth migration. This mechanism, however, occurs far less frequently as a primary factor in producing tooth movement than does occlusal trauma, alone or combined with pocket formation.

2. Sufficient mesiodistal space must exist to receive the malposed tooth.

3. The blocking forces must be reduced or eliminated in order to allow for movement.

4. Sufficient tooth structure must remain after the reshaping of the blocking force.

5. Routine periodontal therapy plus additional emphasis on occlusal equilibration must be utilized, in order to realize maximum results.

6. Varying degrees of reactive positioning are possible, rather than only an all-or-none response to the removal of the disruptive forces.

Several case histories illustrate the idea. Although the idea of reactive tooth positioning has been recognized for some time, it has been described to only a limited degree in many of the texts.

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An approach to the initial interview of the periodontal patient

Abraham Berliner. *New York J.Den.* 27:15-16 Jan. 1957

The initial examination of the patient with periodontal disease consists of obtaining a complete background history, conducting a clinical examination, and requesting such supplemental laboratory checks and recommendations from the patient's physician as seem indicated. The initial interview establishes the level of rapport between dentist and patient, mandatory to success in treatment.

An unapprehensive, relaxed patient can provide the necessary information. Courtesy, respect and sympathy on the dentist's part are communicated to the patient. The following information should be obtained from the patient: name, address, occupation, and home and business telephone numbers on the basis that exigencies may require a change of appointment.

The dentist should inquire about the "chief complaint," what started it, its intensity, frequency and duration, and whether a similar complaint previously existed. The date of the patient's last visit to a dental office and the nature of the services received can reveal the level of the patient's dental health education and habits. The patient is also asked about previous extraction and the reaction in terms of excessive bleeding, pain and swelling; the types of anesthetics used, and the reaction to the anesthetic; whether missing teeth have been replaced, and whether such replacements are satisfactory and comfortable.

It is important to obtain as complete a picture as possible of the patient's general health and whether he is being treated currently by a physician. Oral pathology is not always purely local but may reflect a systemic disturbance. It is important to know whether there has been a history of surgical procedures or serious diseases, especially the childhood eruptive diseases which frequently may disturb the development and growth pattern. The patient's history of oral habits should be checked as should his possible use of drugs, especially as nutritional adjuncts or for weight control. One should ascertain the frequency of use of dentifrices, mouthwashes, toothpicks and bobby pins, and whether nail-biting, tooth clamping, bruxism, tongue-sucking or cheek-biting exist.

Proper diet is probably one of the most important considerations in respect to the maintenance of periodontal integrity.

On the degree of accuracy with which the foregoing information has been obtained will largely depend the success of the relationship between patient and dentist in terms of cooperation by the patient during his course of treatment and home care.

The examination includes a series of full-mouth roentgenograms, study impressions for casts, and a wax occlusal registration in the terminal hinge position.

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Basic science

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Histology

Intermediate cementum

H. J. J. Blackwood. *Brit.D.J.* 102:345-350
May 7, 1957

The study of cementum has occupied an important place in dental literature since 1824 when Ringelmann first noted that, in addition to enamel and dentin, a third hard tissue was present in the human tooth. Particularly perplexing to most workers has been the nature of the actual junction between the cementum and dentin. The existence of protoplasmic communications across part of this junction has been discussed by many authors and although acceptance of such structures is now well established, convincing illustrations of these connections are remarkably scarce.

The purpose of the present study was to portray as clearly as possible some of the protoplasmic connections found in the intermediate cementum layer and to discuss some factors which may be related to the problem of histogenesis.

Thirty-five adult teeth were examined histologically. Of these, 21 were molars, bicuspids and cuspids, all of which showed to some extent an intermediate cementum layer, whereas the incisors, of which 14 were examined, appeared to be devoid of this layer.

The teeth, or blocks of teeth *in situ* in the jaw, were fixed in 10 per cent formol-saline and decalcified in 5 per cent formic acid, but no mordants were used prior to decalcification. The larger blocks were embedded in celloidin and the single teeth in paraffin wax. The sections were stained by the picrothionin method of Miller (1901).

It is concluded that the identification of the intermediate layer with the cementum would appear to be established, and hence the term "intermediate cementum" justified. The nature and extent of some of the protoplasmic communications of this layer were demonstrated.

The histogenesis is thought to be related in some way to incomplete differentiation of the first layer of cementocytes possibly occasioned by disturbance (traumatic or otherwise) during the process of histodifferentiation. No conclusions were drawn as to the biologic function, if any, of the intermediate cementum layer.

An attempt was made, by incorporating nuclear stains with the picrothionin stain, to identify nuclear material in the cell inclusions of the intermediate cementum layer but as yet success has been obtained only in staining the nuclei of the osteocytes and peripheral cementocytes by these methods. Further work is in progress.

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Figure 1 Left: The distinct line of the dentinocemental junction beneath the acellular cementum. Center: The intermediate cementum between the dentin and cellular cementum of the root of the same tooth. Right: Connections between the terminal dentin tubules and the protoplasmic inclusions of the intermediate cementum

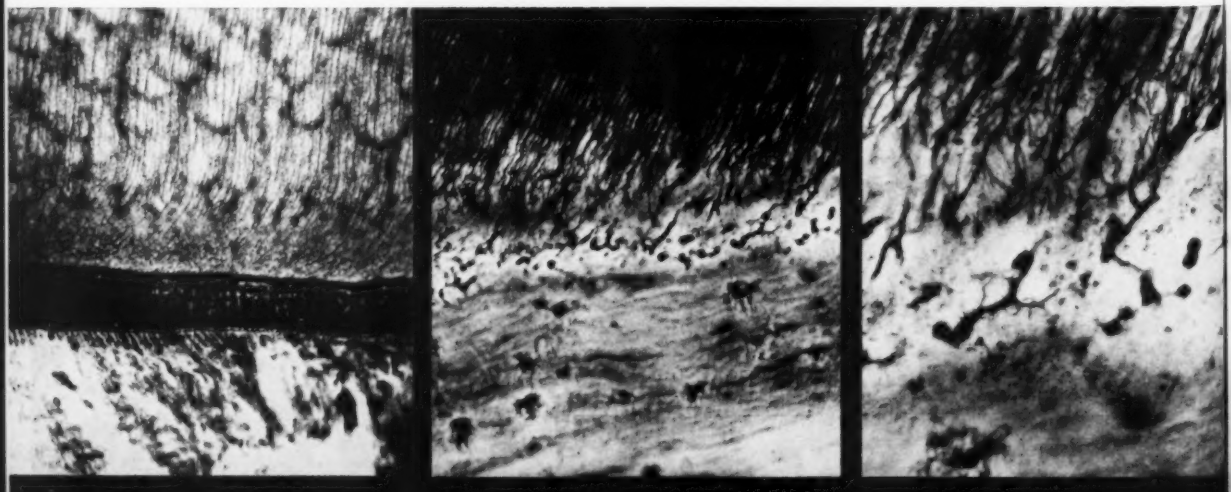

Figure 2 A single protoplasmic connection from the dentin to the intermediate cementum

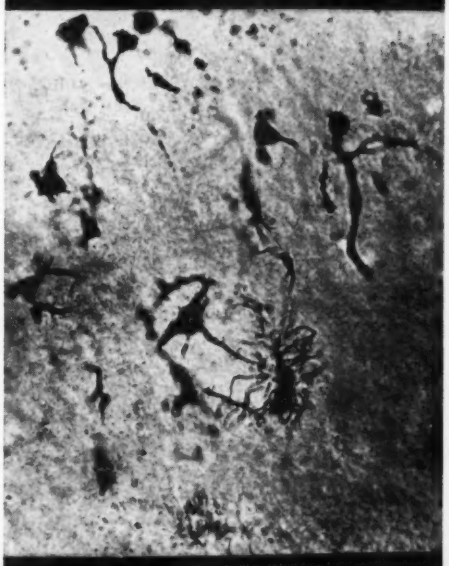

Figure 3 A protoplasmic connection from the intermediate cementum to a cementocyte

Figure 4 Protoplasmic inclusions of the intermediate cementum which do not show any direct communication with either the dentin or the cementum

Surface changes in enamel

B. R. Bhussry and B. G. Bibby. *J.D.Res.* 36:409-416 June 1957

A histologic study was made of the brown pigmentation in the enamel surfaces of human teeth in relation to tooth age on ground sections from 82 bicuspids.

Microscopic study of predetermined regions of the gingival, middle and occlusal thirds of the enamel surfaces showed a consistent increase in the amount and intensity of surface pigmentation with increasing age.

Decalcification of some sections demonstrated that the pigmented regions are highly resistant to the action of acids.

The fact that the pigmented regions leave a greater amount of residue on acid decalcification than do the unpigmented regions suggests that the material making up the pigmented regions has an increased organic content or may be composed largely of organic material.

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Studies on mottled enamel

B.R. Bhussry. *Internat.A.D.Res.Preprinted Abs.* 9 March 21, 1957

The histologic structure, density and nitrogen content of mottled enamel were investigated and the findings compared with corresponding data on sound enamel. Fifty-eight samples from teeth showing varying degrees of mottling and associated pigmentation were used. Ground sections were prepared and the enamel was separated according to a previously described method. Density determinations were done by Melon's micropycnometric apparatus, and the nitrogen estimations on the same samples were done by semi-micro Kjeldhal procedure.

Histologic observations on ground sections from mottled teeth revealed that the pigmentation was essentially confined to the outer third of the enamel. In these regions the structure of the rod sheaths and of the incremental lines was obscured by the pigmentation. Examination under ultraviolet light showed that the distribution of increased fluorescence corresponded to the pigmented regions. The density of mottled enamel was 2.81 Gm. per cubic centimeter as compared with 2.84 Gm. per cubic centimeter for normal enamel. The nitrogen content of mottled enamel was higher (0.75 ± 0.04 mg. per gram) than the nitrogen content of sound enamel (0.56 ± 0.02 mg. per gram). This difference in nitrogen content was also observed on a volume basis.

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Natal and neonatal teeth: histologic investigations in two brothers

Einar Hals. *Oral Surg.,Oral Med.& Oral Path.* 10:509-521 May 1957

Teeth that are present in the oral cavity at birth are called "natal teeth" by Massler and Savara, whereas teeth that erupt within one month after birth are called "neonatal teeth." Natal teeth occur rarely.

A report is given of the eruption of the first tooth in three brothers. The oldest brother got his teeth at the normal time. The second boy had a lower incisor (neonatal tooth) that erupted nine days after birth and was shed when the boy was six years old. It was a little smaller than the other lower incisors. The youngest boy had two lower incisors present at birth, which were removed nine days later. Results of the histologic investigation of the two natal teeth and the neonatal tooth are reported.

In the natal teeth the enamel, in which mineralization had not been accomplished, covered only the incisal two thirds of the crown, whereas the cervical third was covered by cementum. Extensive enamel caries developed during the nine days after birth when the boy was nursed solely by his mother. Signs of caries in the dentin could be observed. In the dentin the incisal half was otherwise normal, whereas the cervical half showed a most irregular structure, namely, dentinal tubules decreasing in length toward the cervix, where they disappeared completely, and further cell inclusions in empty spaces in the mineralized matrix. In the part of the dentin

covered by cementum there was a peripheral zone of interglobular dentin with small globuli. In the part of the dentin covered by enamel, the peripheral zone was normal.

Incremental pattern in the dentin was hardly visible. The semilunar formations, visible in polarized light and indicative of spherical mineralization, were not present in their ordinary pattern. The dentinoenamel junction did not have the normal scalloped appearance. At the cervix the dentin showed a deposition of bone tissue in the form of a root. No Hertwig's sheath was present.

The absence of Weil's zone and of the cell-rich zone in the pulp is in accordance with a normal stage of development. An ascending pulpitis deriving from accumulations of bacteria in the basal pulp border was established. These bacteria must have come from the oral cavity through the periodontal tissue.

The neonatal tooth had a root with an extension. A broad zone with spaces occupied the exterior part of the root dentin. The cervical third of the enamel was hypoplastic and hypomineralized.

The familial tendency indicated that in the two brothers the natal and neonatal teeth had been formed in superficial position by a genetic factor.

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Cornification of the alveolar epithelium after tooth extraction and use of a denture

(Alveolien epiteelin sarveistumisesta hampaiden poiston ja levyproteesin käytön jälkeen)

P-E. B. Calonius. *Suomen hammaslääk.toim.* 53:1-16 March 1957

Various opinions are held regarding the structure of the oral epithelium and the origin of the horny layer of the mouth.

Histologic specimens were removed with a punch from healed extraction scars in eight patients. Other specimens were removed from the immediate vicinity of the first biopsy, after the use of dentures.

The extraction scar usually was keratotic. The changes described by Eisenring (1955) were found: proliferation of the epithelium, vacuolated cells, reticular epithelium, droplets of keratinized tissue and cornification of the stratum spinosum.

After the use of a denture the cornification remained keratotic, or had been transformed into parakeratosis, or was both keratotic and parakeratotic. The statistical study suggests that the stratum corneum had thinned. On the basis of the histologic appearance a distinct thinning of the horny layer had taken place and often the keratotic layer had worn off completely.

Bulevardi 5 A, Helsinki, Finland

▼ Anthropology

Calculus, wear, and alveolar bone loss in the jaws of sixth-century Jutes

D. C. A. Picton. *D.Practitioner* 7:301-303 June 1957

Seventeen jaws in a fairly intact state, and 734 teeth, collected from a Jute cemetery near Lyminge, Kent, were examined.

The surfaces of the teeth, especially on the buccal side, were not well preserved in many, but at least 19 individuals had definite calculus, 10 showing a moderate amount and 1 gross calculus. The distribution was mainly on the labial and lingual surfaces, and also on the proximal surfaces of a few teeth. All the calculus appeared to be supragingival.

Attrition was recorded with the classification used by Davies and Pederson (1955), ranging from a score of 0 for no attrition to 3 for attrition into the secondary dentin. Excluding deciduous teeth, the amount of attrition was averaged for all teeth from an individual. Three had an average of less than 1 (all under 14 years old), 14 had an average of 1 to 2, 16 had an average of 2 to 3 and 1 had an average of 3. The occlusal wear in anterior teeth was mainly at right angles to the long axis. The posterior teeth showed progressive loss of buccal cusps in the lower arch and of lingual cusps in the upper.

Facets of proximal wear were well marked in

all teeth with good surface preservation. The size of the facets ranged in the anterior teeth from 1 to 4 sq. mm., and in the posterior teeth from 3 to 12 sq. mm.

Irregularities of the teeth of a minor order were numerous, but no third molar impaction was found.

Of the 734 teeth, 26 from 13 individuals had caries. All except one was from the age group estimated to be over 40. Almost all cavities were proximal, being mainly in molars.

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▼ Bacteriology

Studies on the acid production and the cell viability of oral acidogenic microorganisms

Göran Frostell. *Acta odont.scandinav.* 15:75-113 May 1957

The stability of the acid production capacity and the viable cell counts of 30 strains of acidogenic oral microorganisms suspended in physiological saline and modified Ringer solutions stored at 22° C. and 10° C. were studied with different methods.

The acid production capacity and the viable cell counts of these suspensions often decreased rapidly during the first hours after the "first suspending" and thereafter were more stable. This was particularly pronounced when tests were performed with alpha-hemolytic streptococci, neisseriae and staphylococci. Increases in activity and viable cell counts were seldom found with these suspensions. Suspensions of lactobacilli, enterococci and yeasts were much more stable, but with these strains rapid increases in activity and plate counts were sometimes found in the first hours after the "first suspending" but not later.

Three hundred experiments with such suspensions indicated that the process of "aging" of these suspensions could be divided into a "labile phase" during the first hours after the suspension was made and a "stable phase" of several days. In the labile phase rapid increases or decreases in activity and plate counts were common (sometimes more than 50 per cent per hour). In the stable phase increases or decreases occurred slowly (seldom more than 50 per cent in 24 hours) and several suspensions remained stable for many days.

The stability of the suspensions was increased if the pH of the suspensions was under control and maintained at a physiological level (pH 6 to 7) and if the temperature of the suspensions was maintained at 8° to 10°C. The ionic composition of the "physiological" solution used in the suspension was of minor importance.

Even when these precautions were taken, rapid changes in activity and plate counts were sometimes found in the labile phase but not in the stable phase.

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Substances essential for life and their laws: the problem of nutrition

(Die lebendige Substanz und ihr Gesetz: Unter besonderer Berücksichtigung des Ernährungsproblems)

Erwin Santo. *Schweiz.Mschr.Zahnhk.* 67:4-23 Jan. 1957

Nutrition does not consist solely of assimilation of proteins, fats and carbohydrates or of vitamins and minerals essential for the growth, maintenance and repair of the living organism as a whole or of its constituent parts.

Nutritional research carried out at the laboratories for bacteriologic research in Lehrbach, Germany, has established that nutrition also involves minute living substances, essential for life, which cannot be further decomposed but which are sensitive and subject to changes caused by physiochemical influences.

Because of premature oxidation and the presence of an unusually high number of possible structural varieties of these smallest living substances, it is, as yet, impossible to synthesize them from the lifeless organic and inorganic substances. Nutrition of all animals, including man, therefore, seems to depend on a constant borrow-

ing and returning of these minute living substances which are essential for life.

Infection is based on similar principles as nutrition, especially on the mechanics of quanta in the living animal or human organisms.

Between the individual organs in the living organism and their cells exists a specific affinity which can be used in practice as organotherapy, either heterologous or homologous, by administrations of fresh cells (Niehans).

The organotropic capacities of these minute living substances can be evaluated as summation effects. These substances usually join with certain metal elements in distinguishable patterns. Joined with lithium, for instance, cells of the lymphocytic or monocytic types are produced which are increased in size to about 20 microns.

It can be assumed that the oral flora is caused by transformation of cell nucleus substances of the human and animal organisms into bacteria of different types.

Reiner-Müller's theory of the homology of bacteria and chromosomes has been confirmed by the reproduction of strongly vital cells after a culture of colibacillus was inserted into a cell-free nourishing medium. The chain of evidence for the law of maintenance of living substance in man and animal, therefore, seems to be closed.

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A comparison of lactobacillus species from human saliva with those from other natural sources

A. C. Hayward. *Brit.D.J.* 102:450-451 June 4, 1957

By the use of a simplified version of the system of classification recently devised in the Department of Bacteriology of the University of Birmingham, a survey was made of lactobacillus species from animal and saprophytic sources. Some 1,449 species were isolated from the saliva and vagina of human beings, from the feces of domestic turkeys, fowls, rats and guinea pigs, from 11 English, 2 New Zealand and 13 European cheeses, and from silage.

Human saliva appears to contain all the species identifiable by the methods employed, but the preponderance of *Lactobacillus casei* (276 species) and *L. fermenti* (201 species), in the homofermentative and heterofermentative groups respectively, is striking.

Although the sources were deliberately chosen for their content of lactobacillus species, some interesting points arise. One of these is the specialized flora both of silage and of the vagina by comparison with the remainder. Another is the predominance of high temperature strains from fecal sources. It appears that some types of habitat may support a wide, and others a much narrower range of species; and that certain species inhabit a very wide, and others a much narrower range of habitats.

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▼ Chemistry

The metabolism of different fluorides in the rat. I. Comparisons between sodium fluoride, sodium silicofluoride and stannous fluoride

Donovan A. Weddle and Joseph C. Muhler. *J. D. Res.* 36: 386-390 June 1957

When sodium fluoride, sodium silicofluoride and stannous fluoride are administered to rats in the drinking water at a fluorine concentration of 1.0 microgram per milliliter, there are essentially no differences in the amount of fluorine found either in the feces, urine or the whole carcass. Good recovery of all the fluorine given to the animals is possible.

Calcium chloride has a pronounced inhibiting action on fluorine absorption and retention within the skeleton. This has been studied by estimating the amount of fluorine in the feces, urine and whole animal when identical amounts of fluorine were given by stomach tube to two groups of rats, one of which received the fluoride in aqueous solution and the other in a calcium chloride solution.

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Pathology

Diabetes mellitus and dental treatment

(Diabetes mellitus und Zahnbehandlung)

K. H. Ulrich. *Zahnärztl.Rundschau* 66:112-115
March 20, 1957

Dentists frequently have to treat patients who are afflicted with metabolic disorders, especially diabetes mellitus. It is essential to be informed of the diabetic condition prior to examination and treatment.

Diabetic patients should be encouraged to visit the dental office regularly because it is important that a healthy oral condition and good repair of the teeth are maintained.

If diabetic patients wear artificial dentures, the patients must be examined especially carefully to ascertain that the dentures fit properly and do not cause irritations. In such patients, any tooth or gingival infection requires immediate treatment.

When tooth extractions are indicated, the dentist must make certain that the diabetes is controlled. The number of teeth to be extracted in one sitting should be decided after consultation with the patient's physician.

In instances in which the gingiva appears to be sore or tender, the prescribed diet should be prepared in a manner which makes the masticatory function easier or even unnecessary. Fruits and vegetables should be used in form of juices or be consumed cooked and mashed. Meat, fish and poultry should be ground. The intake of carbohydrate usually is regulated by the diet prescribed by the physician. Most other foodstuffs do not require special preparations.

Prompt care of all injuries, no matter how slight, is essential in preventing the development or the spread of infection to deeper tissues. The physician should be consulted to treat even minor injuries because they do not heal readily in diabetic patients.

With the introduction of chemical agents and antibiotics, most infections now can be treated successfully, and operative dentistry and oral surgery no longer carry great risks in diabetic patients.

Dentists should use only antiseptics which have been recommended by the physician, because many commonly used antiseptics may irritate, burn or damage the tissue. Antiseptics that should not be used in treatment of diabetic patients include the following: iodine, carbolic acid, phenol, bichloride of mercury, oil of mustard, cantharidin, salicylic acid and capsicol.

When oral surgery is indicated in diabetic patients, three important factors must be considered: (1) prevention of the elevation of sugar in the blood; (2) selection of a suitable anesthetic, and (3) avoidance of postoperative complications.

It is advisable to postpone all oral surgical procedures in patients with uncontrolled diabetes. The appropriate time to perform tooth extractions or oral surgical interventions is on the descending portion of the blood sugar curve.

It should be emphasized that the physician carries out the management of diabetic patients undergoing oral surgical interventions. Each patient requires an individual management, and the success of treatment depends on cooperation between the oral surgeon and the physician and on the preoperative and postoperative care.

Karlsburg/Greifswald, Germany

Pathogenesis of aerophagy

(Zur Pathogenese der Aerophagie)

A. Dyk. *München.med.Wschr.* 99:144-145
Feb. 1, 1957

Aerophagy, the spasmodic imbibing and swallowing of air, followed by noisy eructations, occasionally occurs before or during dental treatments in hypersensitive, neurotic or hysterical patients. In these persons, the normal deglutition reflex is initially combined by synergism with the acts of inspiration and expiration.

Only in mammals in which respiration by suction is fully developed can a clear distinction be made between deglutition and respiratory reflexes. In man, therefore, the respiration reflex is imbibed immediately after the beginning of the deglutition reflex, and the initial synergism is changed into an antagonism.

The reason for aerophagy in persons feeling apprehension, uncertainty and fear and in whom

emotion predominates over reason is that the normal checking of the respiratory reflex is either absent or not sufficiently developed, and, as in some lower forms of vertebrate animal, the primordial synergism persists.

This pathogenic conception of aerophagy can be supported by the fact, often noted by physicians and dentists, that aerophagy can be suppressed by the administration of drugs which elevate the threshold of stimuli.

Before dental treatment of persons showing extreme anxiety is attempted, small doses of sedatives should be administered (0.13 to 0.26 Gm. of hexobarbital).

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Anodontia and aplasia: report of two clinical cases

(Consideratii asupra anodontiei si aplaziei in legatura cu 2 cazuri clinice)

M. Schapira and E. Rusu. *Stomat.,Bucharest* 4:29-36 Feb. 1957

The term "anodontia" implies the complete failure of the teeth to develop as a result of the defective growth or the congenital absence of dental germs. The term "partial anodontia" (oligodontia) is commonly used for the absence of some of the teeth.

In the first case reported, the patient, a 16 year old girl, has 17 permanent teeth missing in her dental arches. In the aveoli appeared small dense formations which probably were products of rudimentary efforts of tooth formation.

The patient's past history revealed that a complete and normal set of deciduous teeth had developed and erupted at the proper time but that only 11 teeth had developed normally in the permanent dentition.

The family history contained the following data: (1) in the patient's father both upper lateral incisors were congenitally missing; (2) in the mother all third molars were absent, probably also congenitally; (3) in the sister both lateral incisors were congenitally missing; (4) in the brother all teeth had developed and erupted normally, and (5) no information was obtainable in regard to the dental condition of grandparents and other close relatives.

In oligodontia there is a great variation in tooth development. Sometimes it is difficult to diagnose this condition because traumatic injuries may have produced the loss or destruction of permanent tooth buds.

Aplasia (microdontia) is characterized by a dentition in which all teeth are uniformly diminutive. This condition also is hereditary. Common usage, however, permits this term to be applied to a condition in which isolated teeth, usually upper lateral incisors or third molars in both jaws, are congenitally dwarfed.

In the second case reported, the patient, a 14 year old boy, had diminutive upper and lower lateral incisors. The third molars were missing.

The patient's history revealed that also the deciduous lateral incisors erupted diminished in size, had become prematurely decayed and had been extracted. The permanent upper and lower lateral incisors had erupted normally but never reached the proper size and shape.

No data on the family dental history were obtainable.

In both instances, proper masticatory function was achieved by prosthetic restoration after multiple tooth extractions.

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Recurrent painful aphthae

J.A.M.A. 163:409 Feb. 2, 1957

Q. A 26 year old woman, asthmatic since childhood, has been suffering from multiple ulcerations of the tongue and mouth for the past two years. These occur most frequently in the trough between gingival and buccal walls. On the tongue they are small white patches 3 to 4 mm. in diameter. In the gingivobuccal regions the aphthae are a quarter to a half inch long and half as wide, these latter patches being denuded of epithelium. The pain interferes with nutrition. The lesions appear cyclically, with almost total disappearance during the first few days after the menses. The patient has been treated with silver nitrate and phenol; repeated smallpox vaccinations; injections of ten units of insulin two or three times daily; iron; acidulin before meals; a bland diet; troches of tyrothricin and bacitracin, and

estrogenic hormones. All have been equally disappointing. Please suggest other possible causes and treatment.

A. The etiology of recurrent and painful aphthae is unknown. Although the herpes virus cannot be demonstrated, good therapeutic results have been reported after repeated smallpox vaccinations. Various foods may cause aphthae in some patients. Injections of snake venom and immunization with herpine vaccine have been of value in some patients, whereas diluted Fowler's solution [a solution of potassium arsenite] used as a mouthwash and histamine desensitization have given good results in other patients.

A. It would be interesting to know if the patient had received any antimicrobiological drugs prior to the onset of the illness. Buccal infections often are seen following administration of these drugs.

A single treatment with silver nitrate and phenol should cause no harm, but repeated use might cause irritation. Many similar lesions are associated with deficiency states; the chances for cure may lie in that direction. Therapeutic doses of nicotinic acid, riboflavin and large doses of vitamin A should be tried. Local treatment with diluted hydrogen peroxide and mild alkaline mouthwashes would be the method of choice. The possibility that the patient, consciously or unconsciously, is doing something to keep the region irritated, must be borne in mind.

Oral conditions in lepers

M. A. Abdalla. *Egyptian D.J.* 3:27-29 Jan. 1957

The author and a colleague made oral examinations of 47 lepers at the Amriah segregation camp. The ages of the patients ranged from 19 to 80 years, and they had suffered from the disease for periods ranging from 1 to 30 years.

Teeth extracted from some of the patients were examined histologically and found to be normal. Five patients suffered from severe attrition. Two patients were edentulous. Gingivae were of normal appearance, with no lesions. Two patients suffered from ulcerative gingivitis and 12 (about 25 per cent) from periodontal disease.

The faces of 28 patients were affected with leprosy. In eight patients the anterior part of the tongue was smooth. Two patients had tubercles on the tongue. One patient had a tubercle on the inside of the cheek. Two patients had perforation of the hard palate. Whereas syphilitic perforation is restricted to the midline of the palate, leprotic perforation may occur anywhere. Results of the Wassermann test on the two patients were negative. The soft palate was destroyed in four patients. In five patients the uvula was deviated to the right or left, was inflamed in one patient, and was completely destroyed in another five patients. The anterior pillar of fauces was inflamed in two patients.

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Accidents and thrombosis

(Unfall und Thrombose)

G. Hasse. *München.med.Wschr.* 99:14-21 Jan. 4, 1957

After accidents, minute particles of matter foreign to the blood stream frequently cause closure of blood vessels and produce various syndromes of embolism or thrombosis.

An investigation recently carried out at the Surgical Clinic of the University of Jena, Germany, revealed that 1,027 patients (18 per cent) of the 5,700 patients treated surgically in 1955 had been victims of accidents of various types.

In 137 patients (2.4 per cent) posttraumatic embolism or postoperative thrombo-embolization developed.

The number of accident victims who suffered postoperative thrombo-embolization was greater than the number with posttraumatic embolism.

The investigation also revealed that persons with a seemingly normal blood circulation have a comparatively greater tendency to accidents than other groups.

Accidents, especially those causing fractures in the maxillofacial region, occur more frequently to persons who are in the second half of life.

After reconstructive plastic and oral surgery, anticoagulative treatment is superior to conservative procedures. According to Zilliacus, conservative treatment was successful only in 5 per cent of the 680 instances of thrombosis or embolism.

Merz and others reported that anticoagulative treatment, if timely, did obtain favorable results in the majority (78 per cent) of instances.

Statistical research is being continued on the relations between embolism and thrombosis caused by accidents and fractures in the maxillofacial region treated with anticoagulants, and the technical data will be published later.

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Oral and dental manifestations in mongolism

(Manifestations bucco-dentaires du mongolisme)

J. Raison, M. Lepoivre and R. Ackermann. *Actual.odontostomat.,Paris* 10:347-359 Sept. 1956

Mongolism, so termed because of the many resemblances of the typical physical characteristics to features of the Mongolian race, can be diagnosed early by the peculiar formation of the skull, tongue, teeth and eyes.

Clinically, mongolism is the type of idiocy which exhibits some similarity to myxedema and cretinism.

Anatomically, mongolism is a mental deficiency, a syndrome consisting of a broad face, flat nose, plicated and malposed tongue in a constantly open mouth, soft skin and flabby musculature. Tooth eruption usually is retarded and irregular, and agenesia in the dental arch is common.

The disorders in the upper jaw are as follows: (1) malocclusion especially in the anterior region, and (2) large and crowded teeth in a protruding arch. Acromegalia appears frequently in the lower jaws.

Mongolism can be determined in the early embryonic period. It results in mental deficiency ranging from idiocy to imbecility, pronounced liveliness and imitativeness, and physical and moral insufficiency. The other specific characteristics of cretinism are absent.

At present, there is no acceptable evidence to prove a relationship between mongolism and caries. Some authors have claimed, although from limited data, an indication of constitutional or chemical condition that causes periodontal disease in mongoloid patients. The individual metabolism is probably controlled by the endocrine system—overactivity of the sympathetic nervous system, overproduction of acids, and overactivity of the parasympathetic nervous system.

Malocclusion occurs frequently. It is probably caused by the pathologically altered metabolism during the developing period, thereby interfering with normal growth.

In mongoloid patients, the development of enamel and dentin is less affected than that of the other parts of the facial skeleton. The eruption of the teeth, however, is greatly disturbed.

Endocrinology and knowledge of metabolic disorders are still in a primitive stage. Many oral abnormalities are observed, but the pathogenesis of endocrine diseases, especially of mongolism, is still obscure. It will require the combined efforts of dentists, physicians and biochemists to determine the underlying phenomena of mongolism.

Hôpitaux des Paris, France

Examinations and re-examinations of Bottyan's antigen test in dental focal infection

(Untersuchungen und Nachprüfungen des Bottyan-Antigen bei dentogener Herderkrankung)

Ernst Lautenbach. *Schweiz.Mschr.Zahnhk.* 66:909-926 Oct. 1956

The problem of dental focal infection has been considered seriously only since 1920. Innumerable reports have suggested that dental foci of infection are causative factors in a variety of systemic diseases. Influenced by such reports, dentists all over the world have extracted countless numbers of teeth in the hope of curing systemic diseases.

Although dentists are not expected to treat conditions and diseases beyond the region of the oral cavity, their patients have the right to expect that dentists will have the ability to recognize and diagnose disturbances in general health that bear a relation to oral health. Therefore, the practicing dentist must acquire knowledge of clinical medical theory and practice to become truly a practitioner of the healing art.

At the Clinic and Polyclinic of the Dental In-

stitute of the University of Bonn, Germany, Bottyan's antigen test was investigated as a diagnostic procedure for determination of relations existing between dental focal infection and systemic diseases.

The result indicates that in 56 patients out of 72 tested, the reactions to the test were of an unspecific nature and were similar to the reactions to different stimuli.

After application of Bottyan's antigen, the blood level picture revealed little specific action of the test compound and no significant reaction to it.

Re-examinations made from three to five months after tooth extractions (elimination of dental foci of infection) resulted in a picture which was indefinable, unstable and inaccurate. It was impossible to evaluate the systemic conditions correctly.

Re-examinations made one, two and five years after extractions of all teeth brought the unexpected result that the number of patients in whom no changes in the systemic condition were observable had increased.

It is recommended that the results of the elimination of dental foci of infection by tooth extractions should be re-examined after at least five years—with half year periodic controls—to determine success or failure.

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Christmas disease in a woman

R. M. Hardisty. *Brit.M.J.* No. 5026:1039-1040 May 4, 1957

A 22 year old single woman was investigated because of a history of prolonged bleeding after tooth extractions. She had had teeth extracted on several occasions since the age of six, and each time had bled from the tooth socket intermittently for from 7 to 14 days. It had always been possible to control the bleeding eventually by plugging, and she had never had a blood transfusion (until after this paper was written.)

No abnormal bleeding had occurred at the spontaneous shedding of the deciduous teeth. Two teeth had been extracted after the diagnosis of Christmas disease was made, and on this occasion bleeding was successfully controlled by packing the tooth sockets with an absorbable dressing soaked in thrombin. With this treatment bleeding stopped within 24 hours, but started again three days after the extraction, necessitating repacking, which resulted in permanent hemostasis.

The patient's serum contained about 8 per cent of the normal amount of Christmas factor.

The family history suggested that the patient's father and his uncle suffered from Christmas disease of a similar degree of severity. The genetic implication of these observations is that the gene for Christmas disease may be intermediate rather than completely recessive.

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Symptoms associated with the temporomandibular joint: a study of 491 cases

L. Laszlo Schwartz and Harold P. Cobin. *Oral Surg.,Oral Med.& Oral Path.* 10:339-344 April 1957

Four hundred ninety-one patients (398 women and 93 men) with symptoms believed to be associated with the temporomandibular joint were examined at the Columbia-Presbyterian Medical Center. The chief complaints were as follows: pain, 368 patients (75.0 per cent); clicking, 44 (9.0 per cent); limitation, 36 (7.0 per cent); subluxation, 17 (3.5 per cent), and miscellaneous, 26 (5.5 per cent).

In 295 patients (62 per cent) pain was associated with other symptoms. Organic disturbances were found in 42 patients, chiefly rheumatic or neurologic disease.

Three hundred seventy-seven patients (77 per cent) suffered from a functional disturbance, a temporomandibular joint pain-dysfunction syndrome. Of the 377 patients, 134 (36 per cent) manifested symptoms of the incoordination phase, 235 (62 per cent) of the pain-spasm phase, and 8 (2 per cent) of the contracture phase. Many patients in the pain-spasm phase gave a history of having had symptoms of the incoordination phase.

Of the 377 patients, 312 (83 per cent) were women and 65 (17 per cent) were men.

The 134 patients manifesting symptoms of the incoordination phase were grouped according to sex and age in decades, and the following order of frequency was revealed: (1) women, third decade; (2) women, fifth decade; (3) women, fourth decade, and (4) men, third decade.

When the 235 patients displaying symptoms of the pain-spasm phase were grouped similarly, the order of frequency was: (1) women, fourth decade; (2) women, fifth decade; (3) women, third decade, and (4) women, second decade.

The syndrome described by Costen (1934) was not found.

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Migration of lower cuspids to positions mesial to the lateral incisors

(Über die Verlagerung der unteren Eckzähne auf die kontralateral Seite des Kiefers)

Paul Bruszt. *Acta Morphol.Acad.Sci.Hung.* 7:199-207 Feb. 1957

Stafne, Mathis, Kowarsky, Eschler, de Jonge, Taviani, and recently Schulze, have reported on the occurrence of duplicate cuspids in deciduous and permanent dentitions. Some mentioned the migration of duplicate lower cuspids to positions mesial to the lateral incisors. Such instances, however, are rare.

At the department of dentistry of the Municipal Hospital in Baja, Hungary, two patients were examined in whom duplicate lower cuspids had migrated.

Case 1. The patient, a 29 year old woman, complained of pain persisting after extraction of the lower right third molar. It was observed that the lower central incisors were crowded. The lower right lateral incisor was adjacent to the first bicuspid. The space between the right central and lateral incisor was occupied by two migrated teeth. The first of those, in the form and size of a normal cuspid, had rotated around its longitudinal axis. The other tooth, smaller but definitely cuspid-shaped, was positioned mesially and labially to the other migrated tooth. This tooth also had rotated around its longitudinal axis but in a forward direction. Both teeth were normal cuspids that had migrated from opposite sides. The place of the left cuspid remained empty, and there the alveolar process was narrowed buccolingually.

Roentgenograms showed that in the involved region neither root remnants nor impacted teeth were present.

The patient stated that she never had had a permanent right cuspid, and that the supernumerary cuspid which erupted on the left side, anteriorly to the incisors, had only recently migrated to its present site.

Case 2. The patient, a 47 year old man, had two lower cuspids side by side positioned adjacent to the left lateral incisor and the first biscuspid. The place of the left cuspid was empty and slightly narrowed because the lateral incisor was displaced distally. A strongly abraded and carious tooth had occupied the place of the right cuspid.

Roentgenograms revealed that the root of this crownless tooth had the appearance of the root of an underdeveloped deciduous cuspid. There were no impacted teeth. The patient stated that he had a normal deciduous and permanent dentition. At the age of 20 years, the two cuspids erupted outside the dental arch.

In both cases reported, the forces directing the orientation of teeth were disturbed by unknown factors which caused the migration of the ectopic cuspids to positions that were mesial to the lateral incisors.

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Oral surgery

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Surgical technics

Correction of the "whistle deformity"

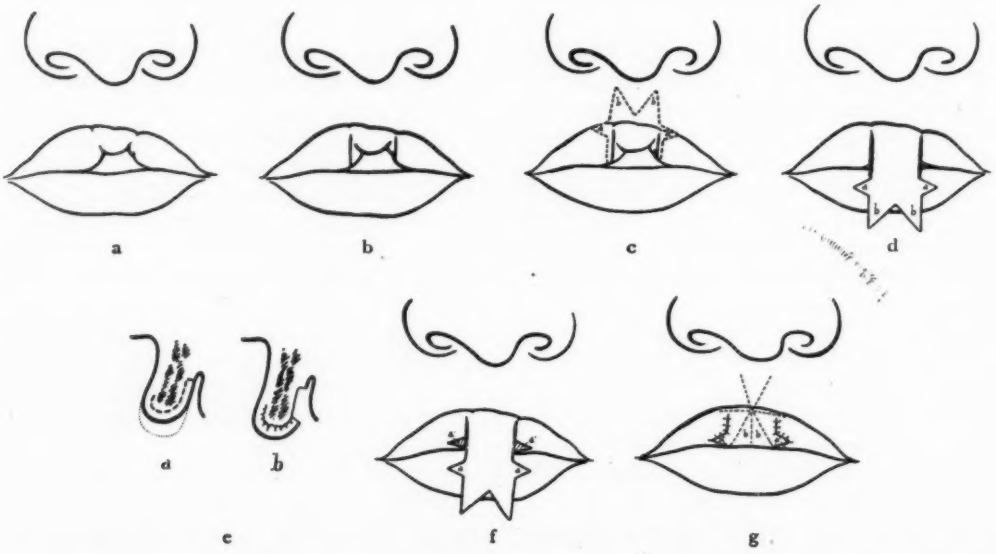
George F. Crikelair and Maurice J. Hickey. *Surg.,Gynec.&Obst.* 104:759-761 June 1957

There are few standard procedures for secondary revision of a cleft lip. Among the possible deformities which need revision after primary lip repair is the "whistle deformity." Here there is a fairly constant pattern for which a standard procedure can be used to advantage. This deformity not infrequently follows the repair of a complete or incomplete bilateral prealveolar cleft in which the lateral segments of the lip are sutured to the prolabium, retaining the vermilion of the prolabium as the center segment of the lip. In the whistle deformity, the mucocutaneous line of the upper lip is even. The lateral portions of the vermilion beneath the mucocutaneous line are full and equal and are a good match with the full lower lip. The central or prolabial segment is lacking in vermilion fullness. As a result, with the mouth in a relaxed position, either a dark hole is seen or portions of the upper central incisors are visible.

A V-Y type of advancement can be done in one operation. The mucous membrane along with the submucosa is advanced downward and outward as a flap based at the mucocutaneous line.

The illustration (a) is a sketch of the lip showing the whistle deformity. Incisions are started almost at the mucocutaneous line on either side at the junction of the central deficient segment with the full lateral components of the lip (b). These incisions are carried backward and upward in the mucous membrane around the free edge of the lip (c). A triangle flap is included bilaterally as marked (*a* and *a*) and each incision is carried almost to the apex of the buccolabial sulcus. Here two larger triangles (*b* and *b*) are formed. A fairly thick flap is then raised (d). The flap is advanced and put into position so that the central segment is equal in fulness to the lateral portions of the lip (e). The two small triangular flaps (*a* and *a*) are thus advanced downward and forward, toward the mucocutaneous line.

After the small triangles (*a* and *a*) are advanced forward, triangular wedges of mucous



membrane of similar size are removed from the lateral segments of the lip (a′ and a′ in f). The entire flap is then sutured into its new position with interrupted catgut sutures (g). The small lateral triangles (*a* and *a*) fit into the lateral segments of the lip. The larger triangles (*b* and *b*) are advanced and sutured together. With slight undermining, the under surface of the upper lip is sutured together in a stellate manner.

The operation can be done under nerve block anesthesia. No dressing is needed. There is apt to be considerable swelling of the upper lip postoperatively.

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Cow bone found successful for repair of mouth defects

M.News 3:3 July 1, 1957

Clinical trials in which cow bone was used to repair oral cavity defects in humans show evidence of success. The bone is boiled with ethylenediamine to remove protein, starch, sugar and fat from the matrix. Of 18 patients receiving heterografts from anorganic cow bone, none has shown a foreign body reaction. Anorganic cow bone has been placed in enucleated cysts, periapical defects and bone alveoli after tooth extraction, in patients treated at the Naval Medical Research Institute. In previous successful experiments with monkeys, Navy researchers were able to demonstrate histologically that the anorganic particles were anchored to the host bone by mineral bonding through reactive bone formation.

Iliac bone graft for correction of maxillary retrusion in cases of cleft palate

William Milton, Lorenz H. Adams and Anthony P. Jerome. *J.Internat.Col.Surgeons* 27:384-392 March 1957

Because of injudicious surgical procedures carried out some years ago in the repair of either bilateral cleft lip or cleft palate, a small number of patients are seen with severe facial disfigurement. A surgical technic is described by which a facial contour more nearly normal may be restored to such patients.

The two cases reported have several features in common. Both patients underwent resection of the premaxilla early in life; both present evidence of extreme underdevelopment of the maxilla, with retrusion of the central third of the face; both show extreme collapse of the alveolar processes; both required extensive orthodontic treatment. The additional need for improvement in facial contour initiated a clinical investigation into the merits of transplantation of iliac bone.

The operation is carried out with endotracheal anesthesia. The graft is taken from the iliac crest. The surgical approach to the upper lip is through a curvilinear incision along the base of either the left or the right ala. Undermining is carried out along the floor of the nose with exposure of the nasal spine, and over the lateral aspects of the cheeks. The bone graft must be so constructed as to provide sufficient bulk to restore the normal facial contour, and, preferably, its midportion should rest on the nasal spine. The gratifying results in the two instances described justify further trial of this procedure for the restoration of facial contour in patients on whom premaxillary operations have been performed early in life.

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▼ Fractures

Treatment of maxillofacial injuries in children

Nicholas G. Georgiade and Kenneth L. Pickrell. *J.Internat.Col.Surgeons* 27:640-648 May 1957

Fractures of the facial bones in children are relatively infrequent. When they do occur, definitive treatment should be instituted promptly. Certain precautions and principles not usually adhered to with elderly patients should be observed.

Any gross abnormalities in the general contour of the face should be investigated, with a minimum of handling. Light palpation will disclose any sensitive region and any irregularities of the

mandible, maxilla, zygomatic arches or zygomas. A careful evaluation should be made of the occlusal status and of any displacement or mobility of the jaws. The presence of submucosal hemorrhagic regions usually is indicative of underlying damage to the bone, particularly on the lingual aspect.

The usual wiring technics used for older patients often are not suitable when deciduous teeth must be wired, as these teeth have bullous crowns without the helpful undercuts in the cervical portions of the teeth.

An appliance should be kept as simple as possible. Interference with the deciduous and underlying permanent tooth follicles should be minimized. Elbow restraints may be necessary to prevent dislodgement of the previously applied oral appliances. Precautions should be taken to allow proper feeding and administration of fluids.

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Roentgenology

An appraisal of preventive dentistry as viewed by the x-ray: musings of a roentgenologist

Leonard Frank. *J.California D.A.& Nevada D.Soc* 33:186-187 May-June 1957

Complete mouth roentgenograms of 935 patients were examined. Of the 20,710 teeth depicted on these roentgenograms, only 340 (1.64 per cent) were pulpless and only 144 (0.69 per cent) showed apical rarefaction, suggesting infection. Thus, only 42 per cent of the 340 pulpless teeth showed possible infection. These statistics suggest that the pulpless tooth, if treated and filled before rarefaction occurs, has a fifty-fifty chance of survival.

Since the author opened his office in 1916, he has watched the transition of the unhealthy mouth to the healthy mouth. Among the factors responsible for the growth of preventive dentistry are the system of calling back the patient every six months for a dental examination; radio advertising by the manufacturers of tooth paste; the introduction of the dental x-ray machine; introduction of the bitewing film, and the advent of the school dentist.

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Stereoscopic roentgenograms of maxillary cysts

(Leukakystat stereoröntgenkuvissa)

Yrjö V. Paatero. *Suom.hammaslääk.toim.* 52:5-9 March 1956

Valuable as ordinary roentgenograms are, their lack of depth hampers study of the structure of a given object. Only knowledge of the interdependent relation of the parts observed and of their capacity to absorb roentgen rays will provide an adequate diagnosis by means of an ordinary roentgenogram. Too often the two-dimensional roentgenogram conveys a deficient picture of pathologic changes.

The limitations mentioned affect the roentgenographic diagnosis of maxillary cysts, which vary greatly in size and shape. Several films, taken from different angles, convey a relatively accurate picture, but something is always left to guesswork. When a cyst is partly or entirely embedded in soft tissue or within a cavity such as the maxillary sinuses, its visualization without the aid of a contrast medium is difficult. Cysts entirely within bone show up as darkened transparencies, but the relation between the cystic content and the cavity that has developed in the bone is not distinguishable, since the cystic membrane and its fluid content absorb roentgen rays equally, leaving the boundary between the different parts obscure unless special measures are taken to overcome this.

Kivimäki's technic greatly fortified roentgenographic diagnosis. The dry iodoform powder adheres to every aspect of the cystic membrane as granules, instead of as a smooth, paintlike layer that produces a uniform shadow. The powder shows up clearly, and the thickness of the cystic membrane is observable, as are the size and shape of the cystic cavity. This is important. Since the dry iodoform can be introduced into any cavity, it can be of use in the study of the outer surface

of the cystic wall when the cyst is within the maxillary sinus.

Kivimäki's method nevertheless will fail to achieve its intended ends unless it is coupled with the use of stereoscopic roentgenograms. For although two-dimensional roentgenograms of a cyst will disclose a round or irregular sphere within which tiny particles of various dimensions are spread, they will not disclose which granules are on the cystic wall farthest from the viewer and which on the wall nearest. All the granules are seen on the same plane.

Stereoscopic studies, however, will provide the necessary element of depth, giving a three-dimensional picture of the cyst with its actual size and shape as well as its relation to adjacent tissues. The author has applied stereoscopic roentgenography in ordinary technics and in pantomography and is convinced of its great significance in roentgenographic diagnosis of diseases of the jaws and teeth. The best views of maxillary cysts may be obtained on pantomograms, whereas small dental cysts are best viewed on ordinary dental films. When a cyst of the upper jaw extends far distally, excellent stereoscopic views may be obtained with occlusal films, particularly by use of the author's twin-film technic.

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Anesthesia and analgesia

Scopolamine as a preoperative sedative in children

Albert A. Antoni and Fred A. Henny. *J.Oral Surg.* 15:192-194 July 1957

General anesthesia is indicated when minor oral surgery must be performed on children between the ages of three and ten. Some type of premedication facilitates the anesthesia and surgery. The authors have used scopolamine on 100 patients who were given the drug one half to three quarters of an hour prior to being anesthetized with divinyl ether. Scopolamine given orally satisfies all requirements. Transient nausea and vomiting occurred in 5 per cent of the patients.

Tablets of 1/150 and 1/200 grain are the only size that need be kept in stock. For a child two to three years old, a 1/150 grain tablet is cut in half with a sharp instrument and the half is given. For a child between four and six years old, a 1/200 grain tablet is given; and for a child between six and ten years old, a 1/150 grain tablet is used.

The parent can be instructed to give the drug to the child a half hour prior to the appointment, or the drug can be administered when the patient comes for the surgical procedure.

All patients should receive a routine preanesthetic physical examination. They should abstain from food for at least five hours prior to surgery, and they should be encouraged to empty the bladder just before going into the operating room.

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Are your syringes safe?

Floyd Darl Ostrander. *J.Michigan D.A.* 39:131-132 April 1957

In almost all dental and medical offices instruments are properly disinfected or sterilized. Recent developments, however, including the increase in infectious hepatitis and serum hepatitis, have changed general thinking on what constitutes proper sterilization. There is good evidence to indicate that this virus disease may be transmitted by improperly sterilized needles or other instruments that enter the soft tissues. As little as 0.01 cc. of infected blood can induce infection. Since this disease is always serious and sometimes fatal, it is imperative that syringes and needles be thoroughly sterilized after each injection.

The most reliable methods of sterilization are autoclaving with steam under pressure or dry heat at 320° F. for one hour. If neither method can be used, the syringe should be boiled in water for 15 minutes. The addition of an alkaline agent, such as sodium carbonate, to the water will in-

crease the certainty that the hepatitis virus will be killed.

Under no circumstances should syringes or needles be disinfected in chemical solutions.

The dentist also should aspirate the syringe before injecting a local anesthetic. An intravenous injection of local anesthetic solutions makes them at least ten times as toxic as when the solutions are deposited in the tissues.

A recent study at Northwestern University demonstrated in all types of dental injections the needle was in a vein in over 3 per cent of the injections. The chance of accidental intravenous injection is far from remote unless aspiration is practiced prior to the injection.

It is rare that any serious complication arises from dental procedures. This possibility can be made even more remote by thorough sterilization of instruments and by routine aspiration before injections.

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Hypnosis in dentistry

Neville Parker. *Austral.D.J.* 2:86-88 April 1957

In only about 30 per cent of dental patients can hypnotic anesthesia be produced, according to surveys by Hull, Bramwell, Moss and Wookey. Sex, race, social position and body build have no correlation with susceptibility to hypnotism. Children cannot be hypnotized before the age of five years, and can be hypnotized only with difficulty under the age of ten years. In old age the degree of susceptibility appears to be reduced. Hull has shown "a slight positive relationship" between intelligence and susceptibility but that has not been confirmed by all workers. Personality factors as measured by psychological tests have shown no correlation with susceptibility.

A stage hypnotist can induce a state of somnambulism rapidly. The psychiatrist requires about 20 minutes on the average to induce a light trance at the first sitting, and at least three sessions to increase depth to the degree that produces anesthesia. The dentist, unless he has a local reputation as a hypnotist, would have even greater difficulty in inducing hypnosis as his professional setting and position are much less favorable for producing a state of mind susceptible to hypnotic suggestion. If a dentist were to practice the passive technic recommended by nearly every writer on the subject of hypnodontics, the time factor would be prohibitive.

With the present state of knowledge, hypnosis is impractical in the field of dentistry.

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A clinical evaluation of xylocaine anesthesia

Adrian Cowan. *J.D.Res.* 35:824-839 Dec. 1956

The relative efficacies of lidocaine and procaine hydrochloride were compared by evaluating clinical observations under varied conditions of administration. Two solutions available commercially in England were employed: lidocaine hydrochloride 2 per cent with epinephrine 1:80,000, and procaine hydrochloride 2 per cent with epinephrine 1:40,000. Data were collected from 329 injections performed on 300 patients, and the results were subjected to statistical analysis for significance of the differences.

The results indicated that, when administered by infiltration, mental nerve block or mandibular nerve block, lidocaine was superior to procaine with respect to rapidity of onset of anesthesia, depth of anesthesia, extent or spread of anesthesia, and longer duration of anesthesia. Based on the use of different volumes of the two solutions, lidocaine was further shown to be effective in much lower doses than procaine, at the concentrations employed. Volumes of 0.25 to 0.5 ml. were sufficient for most infiltrations.

The following dosage schedule for 2 per cent lidocaine hydrochloride is postulated, and has been found adequate in every way in the course of over 12,000 injections: for routine restorations in single teeth, especially upper bicuspids, two adjacent upper bicuspids, and in testing for the cause of neuralgia, 0.25 ml.; routine restorations and routine extractions in upper molars, cuspids and one or two incisors, 0.5 ml.; mental nerve blocks, 0.75 ml.; routine restorations in two or

three adjacent upper molars, and pulp extirpation or crown preparations in single-rooted teeth, 1.0 ml.; surgical extraction, except lower molars, 1.5 ml., and mandibular nerve blocks, 1.5 to 2 ml.

A few instances of nausea and of pain at the injection site were noted after the administration of the lidocaine preparation. One instance of severe reaction followed lidocaine administration In this instance a 2 ml. dose of the solution had been given; onset and profundity of anesthesia were normal and uneventful, but after the surgical operation had begun the patient suddenly developed signs of intoxication with the drug. Convulsive spasms of the limbs began and consciousness was lost. Resuscitative treatment was instituted and the tooth was extracted later under general anesthesia.

It is suggested that the use of smaller doses of lidocaine hydrochloride and the availability of a 1.0 ml. cartridge of the solution would reduce the dangers of both toxicity and mechanical damage to the tissues, and would avoid considerable wastage and expense.

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▼ Surgical pathology

Haemangioma of the mandible

Charles S. Kilgour. *Brit.J.Plast.Surg.* 10:60-63 April 1957

A review of the literature revealed that only eight cases of hemangioma of the mandible have been reported. Hemangiomas are tumors made up of new-formed blood vessels. They are usually benign. Two further cases are described.

A 40 year old Italian woman was seen with hemangioma of the body of the mandible on the right side, which was expanded. The overlying mucosa was intact but showed a bluish discoloration of the underlying alveolus. The tumor had been present at least four years. Roentgenograms showed the typical picture of a hemangioma with what appeared to be fine soap bubbles and radiating trabeculations. The condition was successfully treated by excision and curettement.

The pathologist's report of this tumor was as follows: "Section of the edge of the expanded part of the bone shows the increase in size in the bone to be due to a combination of many small thin-walled vascular spaces filled with blood and the formation of new bone. This is expanding slowly. The advancing edge is composed of small thin-walled capillaries. These are followed by organization of invaded muscle and connective tissue by fibroblasts. These in turn undergo metaplasia through organized bony trabeculae. After ossification is completed the spaces between the trabeculae are occupied by the original invading capillaries now extended into somewhat larger spaces. Although this is a slowly expanding tumor the cells do not have the characteristics of malignant cells. . . ."

A 62 year old man with hemangioma of the mandible was treated in December 1952 by R. A. Mustard of Toronto. The patient's only symptom was a small lump in the buccogingival sulcus. Preoperative roentgenograms showed a few loculations in a cystic region in the right side of the symphysis and extending back in the body to the bicuspid region. The mandible was edentulous. The tumor was excised.

Northwestern Hospital, Toronto, Ontario, Canada

▼ Plantation

The healing process after insertion of subperiosteal implants

(Zur Frage der Einheilungsvorgänge bei Gerüstimplantaten)

K. Kallenberger and B. Maeglin. *Schweiz.Mschr.Zahnhk.* 67:300-307 April 1957

At the Dental School of the University of Basel, Switzerland, histologic examinations were carried out to establish the presence of pathologic changes in the oral mucosa, and the progress of the healing process after insertion of subperiosteal

implants serving as supports for complete upper and lower dentures.

The implants were made of stainless steel which was electrolytically plated with an alloy consisting of cobalt, chromium and molybdenum.

In eight patients in whom these implants had been inserted from 3 to 20 months prior to investigation, the clinical examination showed a slight inflammation of the mucous tissue that was in contact with the inserted implants. The abutment rods of the implants were surrounded by pocketlike depressions in the oral mucosa. The epithelium of these pockets consisted of squamous epithelial tissue. The superficial epithelial layers were parakeratotic. In isolated instances, acanthosis with an infiltration of prickle cells into the connective tissue was observed. The connective tissue of the tunica propria was permeated by plasmacellular and lymphocytic infiltrates which caused chronic inflammation. The degree of the inflammatory process in tissues in the immediate neighborhood of the implants appeared to be no more severe than in the oral mucosa.

Injuries to the mucous membrane which had been caused by the test excisions closed and healed spontaneously and without visible residues. After healing, the tissues remained in close contact with the inserted implants.

St. Johanns Vorstadt 3, Basel, Switzerland

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Miscellaneous

The foundations of the Cleft Palate Center and training program at the University of Illinois

Samuel Pruzansky. *Angle Orthodont.* 27:69-82 April 1957

The cleft palate team organized at the University of Illinois in 1949 differed from earlier teams formed elsewhere. Whereas other programs were essentially service oriented, with occasionally a single individual conducting research, the Illinois team had a specific mandate to develop a training program designed to provide interested specialists in the health services with additional training in their particular field; to promote knowledge of, and consideration for, all dimensions of the cleft palate patient's needs, and to foster research. The resources of the professional colleges were committed to the Illinois project.

Since 1949 a longitudinal growth study has been in progress, to examine the mechanisms by which success or failure in the therapy of cleft palate is achieved. The following conclusions have been reached:

1. Plaster reproductions of the palate are indispensable in the interpretation and study of the cephalometric films.

2. The structural and functional differences which exist even between patients with the same kinds of clefts are significant, for these differences often determine the success or failure of therapy.

3. Documentation and analysis of the variables offer a means for improving clinical prognostications. Once adequate criteria are established, prescriptions of treatment become individualized and in accord with the assets and deficits of each patient.

4. There is no single age at which palatal surgery is ideally performed. If circumstances allow for conservative manipulation of tissues at an early age, then surgery will succeed at an early age.

5. The deformity can get better, remain the same or become worse with age.

The College of Medicine and the Research and Educational Hospitals recognize the significance of the Cleft Palate Center's accomplishment in recruiting a staff from several departments of the medical and dental schools and instilling in these individuals a broad interdisciplinary interest. Plans are under way to incorporate the Cleft Palate Center within the larger framework of a newly organized center for handicapped children. The success of the Cleft Palate Center has stimulated extension of the multidisciplinary approach.

In attacking the problems of the handicapped child, dental educators and dental scientists have a great opportunity.

University of Illinois Cleft Palate Center, 808 South Wood Street, Chicago, Ill.

Professional activities

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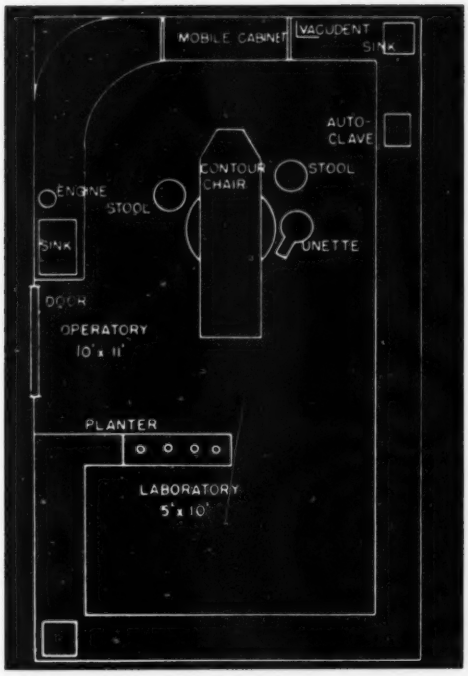
Miscellaneous

Time and motion study in dentistry: part II

David A. Hoffman. *Bul.Greater Milwaukee D.A.* 23:117-118, 120 Aug. 1957



The accompanying sketch represents the office of John Anderson in Chicago. It shows what can be accomplished in individual offices when the observations made in time and motion studies are utilized.

The room is 10 by 17 feet, with a 10 by 12 foot operating room and a 10 by 5 foot laboratory. The patient relaxes in a contoured chair with a built-in vibrator. Operating stools are placed on both sides of the chair, to allow the dentist and his assistant to seat themselves during all procedures at the chair. A Vacudent and equipment used by the assistant are placed on her side. The Unette, a small dental unit at the assistant's side, accommodates the spray, water and air syringes and the Vacudent.

The preparatory work surface is constructed in an arch around the work area. While sitting on the operating stool, the dentist may work at the work surface or operate on the patient. The work surface can bear a small dental lathe, spot welder and gas burner. The dentist has his own sink, as does the assistant. All sinks have foot controls and are made of stainless steel. The viewing box for roentgenograms is placed directly behind the patient. The patient enters directly into the chair and never goes into the dentist's or assistant's work area. Once the patient is in the chair he cannot see the instruments placed behind him.

The dental engine can be concealed in a cabinet, for use either at the preparatory work surface or on the patient. Oral lighting extends from the ceiling. A mobile dental cabinet is recessed in the preparatory work area behind the chair. It can be brought up behind the patient. The cabinet has a large space for diamond disks, stones and burs. Trays for different dental procedures are set up in advance.

From the chair the patient views a flower planter area, behind which is a small dental laboratory. To the left of the planter is a refrigerator for certain drugs, cold cement slab storage, ice pellets and other items. The autoclave is on the shelf at the extreme left.

The individual dentist may prove to himself that the proposed layout is workable by introducing improvements in three stages:

Stage 1. Make longer appointments for patients and render more service per appointment.

Stage 2. Increase the motor speed and utilize air-water or water as a coolant. Place casters on the cabinets to make them mobile, and place the mobile cabinet behind the dental chair. Install operating stools, and work while seated as much as possible.

Stage 3. Turn the chair around so that entrance by the patient is directly into the chair. Install a Vacudent. Change the entire work area to conform to the rule that everything required for all

routine work must be within reach of the operator or his assistant.

Stages 1 and 2 will each increase production by a minimum of 30 per cent. Stage 3 will result in a 50 per cent increase in production.

4335 West Fond du Lac Avenue, Milwaukee, Wis.

Physicians and dentists as public speakers

(Der Arzt als Redner)

H. Biehle. *München.med.Wschr.* 99:196-198 Feb. 8, 1957

Professional men often have to speak in public. They address meetings of their associations and participate in discussions. They may deliver papers to professional and nonprofessional groups or lecture at dental and medical colleges. Sometimes they have to appear in court to testify as experts or in their own defense.

Frequently the task of public speaking appears to be too great for professional men and causes difficulties for speakers and their audience.

Unfortunately, the curriculums of medical and dental schools do not contain courses in public speaking and rhetoric.

For the younger generation of dentists and physicians, it would be helpful to learn more about the experiences of older professional men as public speakers. In order that students may benefit from those experiences, it would be desirable if reports on public speaking appeared in dental and medical journals.

It would help if the advice of an expert in public speaking were sought before writing and delivering a paper, as the aid of a tax expert is sought before filling out the income tax form. Such a speech expert knows how to overcome any lack of confidence, and he can be an enormous help in tutoring one to prepare and deliver a comprehensive speech with proper consideration of the individual characteristics of the speaker.

Courses in public speaking and rhetoric could be made available to students and practitioners if sufficient interest is displayed within the dental and medical professions.

Mommsenstrasse 58, Berlin-Charlottenburg 4, Germany

Security for professional persons

(Previsión para profesionales)

Editorial. *Rev.A.odont., Argentina* 44:297-298 July 1956

A law for retirement insurance for professional persons is needed. Two laws concerning retirement insurance for physicians and workers in medical sciences have been introduced in Argentina, but neither has as yet been enacted. The first law was introduced a few years ago. It was killed because of the opposition of the professional men who felt that it lacked a social and humanitarian character. It was succeeded by a law to take effect on Jan. 1, 1957. This law is at present being modified by the government. It includes the following clauses:

1. The amount of premium to be paid will be decided by the insured.

2. The insured will be permitted to continue practicing while collecting retirement benefits after he has reached the age which gives him the right to these benefits. He will receive these benefits regardless of the number of years he has been practicing.

3. Only members who have paid for 30 years are eligible to enjoy the complete amount of retirement benefits. A deduction of as much as 50 per cent of this amount can be made for members who have not paid for 30 years.

These three clauses are conflicting. The first two are acceptable to the professional people. Not so the third, because such a drastic reduction in the benefits does not give protection to old members. This clause is based on figures and not on humanitarian feelings. Until the insurance system has been in operation 30 years, government social welfare funds should be used for members who cannot have paid for 30 years.

The Asociación Odontológica Argentina called an extraordinary meeting at which it was resolved to entrust the board of directors of the Asociación, the Federación Odontológica Argentina and other medical societies with the study of the law to determine whether it had been prepared on the basis of social insurance and whether it was acceptable. Should some modifications be necessary, the government should be asked to make them.

The 1956 survey of dental practice. III. Income of dentists by type of practice, personnel employed and length of work year

J.A.D.A. 54:117-120 Jan. 1957

Specialists as a group reported a mean net income in 1955 of $16,178, which is 36.8 per cent higher than the mean of $11,829 reported by general practitioners. The mean net income reported by orthodontists was $21,181; oral surgeons, $15,844; pedodontists, $13,781, and prosthodontists, $10,082.

The typical dentist with only one dental chair and no employees had a mean net income in 1955 of $7,494; with two chairs and no employees, $8,798; with two chairs and one assistant, $12,875; with two chairs, one assistant and one secretary or receptionist, $17,685; with two chairs and two assistants, $19,610; with two chairs and one hygienist, $11,603, and with three chairs and two assistants, $18,221.

222 East Superior Street, Chicago 11, Ill.

Tax deductibility on registered retirement plans

J. T. Staddon. *J.Canad.D.A.* 23:347-348 June 1957

On April 12, 1957, the Income Tax Act of Canada was amended so that premiums paid toward specified retirement plans became deductible for taxation purposes, effective January 1, 1957. Such premiums may be deducted up to a limit of 10 per cent of earned income, or $2,500, whichever is less, each year. The following two examples illustrate the substantial savings to be made during the premium paying period:

1. A man, aged 32, with a wife and three children, and an earned income of $12,000 a year, can deduct a premium up to $1,200. The tax saved amounts to $336, reducing the actual cost of his pension to $864 in that year. As his income increases and his dependents' allowances are reduced, so the proportion of tax saving will increase.

2. A man, aged 55, with a wife and no other dependents, earning $17,000 a year, can deduct a premium up to $1,700. The saving in tax amounts to $646, reducing the actual cost in that year to $1,054.

At almost any age the tax concession offers a considerable inducement to invest up to 10 per cent of earned income in a Registered Savings Plan. To qualify for the tax concession, a plan must conform to the following conditions: (1) no right to loan values; (2) no right to cash surrender values; (3) the contract cannot be assigned, which means that it cannot be deposited with a bank as security against a loan, and (4) the ultimate proceeds of the contract must be used for the purchase of a level annuity for the life of the participant, and such annuity must commence before the age of 71 years. The annuity can, however, be subject to a guaranteed period not exceeding 15 years, and may provide for the continuation of benefits on a joint-and-survivorship annuity basis on the lives of the participant and spouse.

A broad outline of the tax concession has been circulated to members of the Canadian Dental Association Pension-Assurance Plan.

2249 Yonge Street, Toronto 12, Ontario, Canada

Pensions for the self-employed: Finance Act 1956

Brit.D.J. 102:29 Jan. 1, 1957

The Finance Act 1956 enables self-employed persons in Britain who wish to make provision for their retirement to claim income tax relief on the whole amount of the premiums paid towards retirement annuities subject to certain maximums. As a result of discussions between the British Dental Association and the Inland Revenue Department, arrangements have been agreed on whereby most practitioners in the National Health Service will be able to gain some benefit from the Act if they wish to do so.

A practitioner in the National Health Service will be entitled to make private contributions toward retirement annuities and to claim tax relief on them, but the aggregate amount on which relief is given for any year for those contributions together with his contributions to the National

Health Service Superannuation Scheme cannot exceed the limits laid down by the 1956 Act, namely, 10 per cent of his total net earnings or 750 pounds ($2,100) if that figure is lower. Where the combined contributions exceed the limit, the excess will be disallowed from the relief on the National Health Service contribution. The term "net earnings" refers to the net earnings of the practitioner on which he bears tax for the year in question, as finally settled with the Inland Revenue, before allowing relief for retirement contributions of either kind but after deducting all other appropriate expenses and so forth.

The maximum of 10 per cent or 750 pounds referred to previously can be increased for those dentists born before 1916.

There are certain circumstances in which it may be to the benefit of a dentist to pay premiums for ordinary endowment insurance policies rather than for the retirement annuities under the 1956 Act.

13 Hill Street, Berkeley Square, London W. 1, England

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History

Medicine and dentistry in Newcastle upon Tyne in the eighteenth century [1]

John Boyes. *Proc.Roy.Soc.Med.* 50:229-235 April 1957

In addition to many medical anecdotes, several items of dental interest from the history of Newcastle upon Tyne are related.

The first number of the *Newcastle Journal,* issued April 7, 1739, carried this advertisement: "Artificial teeth set in so firm as to eat with them and so exact as not to be distinguished from natural. They need not be taken out at night as is by some falsely suggested but may be worn years together. They are so fitted as to be taken out and put in at pleasure by the person who wears them and are an ornament to the mouth and greatly helpful to the speech. Also musical and mathematical instruments are made and all sorts of turning done by William Prior at Whitefriars at the foot of Westgate, Newcastle."

In 1720 a Dr. Lucas advertised, "for the further good of mankind . . . a chemical preparation for killing the toothache without drawing, and scurvy in the gums by giving immediate ease in the most tormenting pains and carrying off the sharp humour which falls from the teeth and gums. Also it fastens loose teeth and causes the gums to grow afresh although eaten away with the very scurvy and those who use it are seldom or never troubled with the toothache any more where it is applied, so that a person may by these methods preserve all their teeth fair and sound even to an old age, price 1s.0d. a bottle with full directions, sold at the Doctor's house in Pilgrim Street, in Newcastle over against Silver Street end, a ball being over the door where may be had his powder for the stone and gravel, strangury and stoppage of the urine, also his tincture of gold that cures rheumatism and weakness in the body or limbs."

In the autumn of 1760 there appeared the following advertisement: "Michael Whitlock, operator for the teeth is at the Queen's Head, Mr. Hay's in Durham who intends to be at Newcastle on Sunday 28th September and to continue one week, and to be at Durham the week following and so to continue week about at both places. He is well known in most parts of England and Ireland for his extraordinary art in fixing artificial teeth in so exquisite and beautiful manner as has baffled the most distinguishing penetration and of equal use in every respect. He cleans the blackest and foulest teeth in a few minutes rendering them as white as ivory, restoring the mouth to its wonted sweetness without pain. He dexterously displaces teeth and draws stumps almost imperceptibly so sunk within the gums that no other artist would attempt."

Fourteen years later another dentist, Charles Edward Whitlock, set up practice in Newgate Street, Newcastle. He may have been Michael Whitlock's son. C. E. Whitlock was also a member of the theatrical company, as actor and subsequently as manager. On April 30, 1785, the following advertisement appeared in the *Newcastle Chronicle:* "Mr. Whitlock, dentist, presents his respectful compliments to the ladies and gentlemen of Newcastle and begs leave to in-

form them that being under an indispensable necessity of quitting this place without a possibility of completing the various orders they have been pleased to honour him with, he intends to return about the middle of the second week in May in order to finish the business he is now obliged to leave undone as likewise to execute any such commands he may be favoured with in the interim. Those ladies and gentlemen whose orders he has received and which form a multitude of business he has not been able to comply with will be first attended to, others in the regular course."

In 1788 Whitlock took over the management of the new Theatre Royal and about 1797 set out for a ten year visit to America where he acted with success. He returned to Newcastle, and the Directory of 1811 lists him as one of three dentists then in practice in Newcastle.

University of Durham, Durham, England

(To be concluded)

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Dentistry in government

Report of the U.S. Naval Dental Corps' assistance to the support force for the U.S. participation in the International Geophysical Year

William R. Stanmeyer. *U.S. Naval M.Res.Lab.* 16:1-7 Report No. 283 Jan. 30, 1957

The U.S. Naval Dental Corps, at the suggestion of the International Geophysical Year Committee, and with the help of the National Research Council, Committee on Dentistry, has outlined a program of dental research to supplement the clinical work of the dentists volunteering to winter in Antarctica during the International Geophysical Year 1957-1958.

The program will include clinical examinations, field observations and dental histories of all persons in the Deepfreeze II expedition who are wintering in Antarctica. All extracted teeth will be preserved and studied from a histopathologic viewpoint. Studies will be made of the effects of Antarctic conditions on other aspects of oral health, such as (1) caries incidence in relation to diet, oral hygiene and stress, (2) changes in oral flora and (3) the relation of psychosomatic factors to dental complaints. A rubber protective mouthpiece to insulate the teeth of men working outdoors under all conditions will be tested. A study of the performance of amalgam, resin and cement silicate fillings from the standpoint of insulation, retention and discoloration will be made.

If time permits, three elective dental research projects will be undertaken, including studies of changes in plaque pH after a carbohydrate rinse in relation to a cold environment, studies of changes in the fluorescent patterns of the tongue as an indication of dietary deficiencies, and the collection and preservation of stimulated saliva for electrolyte determinations.

Parts of the program already completed include the training of medical officers assigned to isolated Antarctic bases in methods of treating dental emergencies, and the procurement and packing of all materials for carrying out the program.

U.S. Medical Research Laboratory, Box 400, Submarine Base, New London, Conn.

Dental intern program

U.S.Navy M.Newsletter 30:23 July 19, 1957

The Navy dental intern training program provides special opportunities for advanced training in dental sciences and clinical practice to the dental officer who is a recent dental school graduate. This training meets the standards for dental internships as outlined by the Council on Dental Education of the American Dental Association.

Applications are accepted from students in their senior year of dental school who are participants in the Ensign 1995 (dental) program. Applicants must be qualified for, and accept, appointments as lieutenant (junior grade), Dental Corps, in the Regular Navy and must be at least 21 and under 32 years old at the time of such acceptance. A minimum of three years' service is required including the year of internship, or a total of four years if the intern has participated in the senior dental student program.

During the dental internship the intern receives the benefits and pay of other Navy dental officers, with the exception of the inducement pay authorized by the Career Compensation Act of 1949, as amended. This inducement pay, however, commences immediately on completion of the internship.

Those selected as dental interns are ordered to active duty for rotating internships commencing each July at the following naval hospitals: Corona, Calif.; Chelsea, Mass.; Camp Pendleton, Calif.; Great Lakes, Ill.; Oakland, Calif.; Philadelphia; Portsmouth, Va.; San Diego, Calif., and St. Albans, Long Island, N.Y.

U.S. Naval Medical School, Bethesda 14, Md

▼ Dentistry around the world

Dentistry in China (Zahnheilkunde in China)

W. Kubin. *Zahnärztl.Praxis* 8:12 March 1, 1957

According to a recently published Czechoslovakian governmental report, only 1,000 adequately educated dentists exist in the People's (Communist) Republic of China. In 1950, Red China had a population of about 475,000,000.

The majority of Chinese dentists were educated at dental schools in England, Germany or in the United States. These dentists teach at Chinese universities and colleges or head departments for dental research, dental clinics or hospitals. Some practice dentistry in their private offices on a part-time basis. Their professional knowledge, skill and experience are not below the standards of the West European countries.

More than 3,000 dental technicians and countless dental charlatans practice "dentistry" as a lucrative trade. The training of dental technicians is more or less only mechanical, although a three-year course of study is officially required. Usually, technicians and charlatans practice in street-level shops with open fronts which are primitively equipped. Their practice is not supervised by dentists or governmental agencies.

Recently, the Chinese government has tried to elevate the professional status of dental technicians by requiring that all dental technicians take additional courses and examinations. After they have completed their studies and have passed the final examination, they are privileged to construct and insert all types of dental prostheses but are not authorized to practice other forms of dentistry. These governmental regulations, however, are violated frequently.

Few dental clinics and hospitals exist in China. Every employed dentist is compelled to treat at least eight patients every hour.

At these clinics, treatment is comparatively inexpensive, and the maintenance of the clinics is possible only by governmental subsidy.

Most of the drugs, materials, instruments and equipment used in dental practice have to be imported. Recently, a factory was opened in Peking to manufacture porcelain teeth.

Both the dentists and the dental technicians are organized in separate professional associations which are controlled by the government.

Students of both sexes, in increasing number, attend courses at the dental institutes attached to each of the six universities of the Chinese mainland.

Invalidenstrasse 87/89, Berlin N 4, Germany

▼ Education

Expenses and income sources of dental students

Shailer Peterson and Walter J. Pelton. *Pub.Health Rep.* 72:405-410 May 1957

The number of dentists in active practice in the United States rose by almost 5,000 between 1930 and 1955. Despite this numerical gain, the supply of dentists in proportion to population continuously declined, from a ratio of 1:1,728 in 1930 to 1:2,168 in 1955.

In the ten year period between 1940 and 1950, dental school enrollments increased by more than 50 per cent, to reach an average of almost 12,000 students a year. Enrollments have continued to

rise each year since 1950 but not high enough to reverse the pattern of shortage.

Responses to questionnaires distributed in May 1954 by the American Dental Association's Council on Dental Education to the 12,516 students enrolled in the country's 43 dental colleges indicated that the average cost of four years in dental school was $11,814. Of this amount, $7,349 covered living expenses and $4,465, or 38 per cent, was charged to school expense. Tuition and fees represented the largest item of school expense, accounting for more than half of the total. Next in importance came equipment and supplies, for which the average student spent almost a third of his school funds. Books accounted for less than 7 per cent, and the remainder was spent on such items as fraternity dues and examination fees.

Since living expenses amounted to 62 per cent of the budget of the average student, they were more important than school expenses in determining the total cost of a dental education. Food accounted for a third, and housing for a fifth, of all expenditures; personal maintenance and recreation constituted a fourth of the budget.

At the time of the study, about 44 per cent of the students were married, and nearly half of these had children. Fifty-six per cent of all dental students were single, and one out of four of them lived at home while attending school.

The dental student drew most of the money required to finance his education from sources within his own family. He supplemented these amounts with funds from other sources—scholarships, loans, or benefits available under the GI bill. The married student relied more heavily on his wife's earnings than on any other type of assistance.

In spite of the substantial financial assistance received from various sources, 57 per cent of all dental students were in debt by the time they were graduated. Fourteen per cent owed $6,000 or more, 23 per cent owed between $2,000 and $5,999, and another 20 per cent owed amounts less than $2,000.

The cost of a dental education is so high that no category of students was able to provide as much as half of the total expenses from personal savings and earnings. Most students depended on wives or parents for the major portion of their funds, and many of them went deeply in debt.

Despite the changing composition of the current dental student body and the gradual withdrawal of the veteran from the campus, married students will continue to make up an important segment of future enrollments. The special needs of these students in terms of housing and other campus accommodations should be a major factor in planning future school facilities. Provisions for adequate, low-cost housing for married students would do much to solve their financial problems.

222 East Superior Street, Chicago 11, Ill.

Perspectives in dental research

Lucien A. Bavetta. *J.Am.Col.Den.* 24:124-127 June 1957

If research in the field of oral health is to progress, it must look far beyond the limitations of the oral cavity.

The mechanistic tradition that still dominates dental education must be changed. The best way to imbue dental students with the scientific spirit is for them to carry on their education in an atmosphere where the spirit of inquiry prevails. The faculty must participate in research. Unless the faculty and students in dental schools become prolific contributors to new knowledge, the schools will eventually decline to the sterile trade school level.

The fields of biochemistry, nutrition, enzymology, bacteriology and many others must be utilized to a greater extent if dental research is to make headway. These disciplines must be employed in a multilateral attack on dental problems; by whatever pathway the student comes to study the diseases of the oral cavity, he finds himself in the midst of studying a complex system of structure and function on the microscopic, submicroscopic and biochemical levels. A greater emphasis on the importance of the biologic perspective in dental research will attract competent investigators from other fields.

It is the duty of dental education to provide the proper climate for research.

School of Dentistry, University of Southern California, 925 West Thirty-fourth Street, Los Angeles, Calif.

Graduate and postgraduate dentistry

Paul H. Jeserich. *J.D.Educ.* 21:183-190
May 1957

The year 1956 marked the sixty-second anniversary of the inauguration of the first graduate courses in dentistry in the United States. In the school year 1956-57 graduate programs were being offered by 73 per cent of the dental schools; in that year 207 graduate programs in 30 areas of the dental curriculum were offered, ranging in length from nine months to five years. In addition to the graduate degree programs, 100 postgraduate programs in 17 areas of the dental curriculum were offered by 59 per cent of the dental schools.

A 1955-56 report of the Council on Dental Education of the American Dental Association indicated that about 1,200 dentists were pursuing graduate or formal postgraduate study in preparation for specialty practice or for teaching and research careers in the various fields of dentistry. Most schools have reached their capacity enrollment for such programs.

The objective of continuation education is to keep the general practitioner and the specialist abreast of the developments in dentistry. Knowledge is becoming outdated so fast in dentistry and the related sciences that the time has come when every practicing dentist is a potential postgraduate student.

The dental practitioner who is imbued with the idea that he must continue to be a student does so in many ways as a part of his planned routine. Each patient under his care becomes the object for careful study, diagnosis and treatment planning. He attempts to keep abreast of new information and to increase his basic knowledge and background by regular reference to the latest textbooks and current dental journals.

Dental schools, county, state and national dental societies, study clubs and academies in various fields all play a part in keeping dentists abreast of the times. Improved methods of communication, such as leased wire broadcasts, radio programs and color television offer additional methods of bringing continuation education to the dentist residing outside the dental centers.

With the continued growth of educational programs, there is now and will be a shortage of facilities for the total needs of undergraduate, graduate and postgraduate education and for the training of auxiliary groups. This inadequacy of facilities has been aggravated in recent years by the increase in undergraduate enrollment.

The increasing responsibilities of dental education require that there be added financial support for capital outlay for increased facilities and for budget for staff, administration and maintenance. A concerted drive for financial aid is needed. Over 40 million dollars have been spent for new dental facilities in the last six years. Similar amounts will be required each five or six years until 1975. The profession must study and plan for the future needs of dental education.

University of Michigan, School of Dentistry, Ann Arbor, Mich.

▼ Industrial health plans

Consumer experience in group dental programs

Goldie Krantz. *Am.J.Pub.Health* 47:44-52
Jan. 1957

In January 1950 a Welfare Fund was set up under collective bargaining agreement between the Pacific Maritime Association and the International Longshoremen's and Warehousemen's Union. The present employer contribution is ten cents for each man-hour of work. Employees contribute 1 per cent of their earnings. The Fund's beneficiaries are 15,000 men in the active work force, 2,000 retired men, and their families (altogether about 50,000 people). The Fund is jointly administered with three union and three employer trustees setting policy.

In May 1954 it was agreed to earmark not more than $750,000 for expenditure on a pilot dental program for the registered longshoremen's children between the ages of 4 and 14. Within one year the dental program had begun in San Francisco, Portland, Seattle and other West Coast ports. In the first year of operation, $630,000

was spent. In May 1956 the parties agreed to extend the whole program for another full year. About 11,000 children were eligible in the first year.

Among the deficiencies in the program is the fact that it does not provide for spreading the cost; that is, if one child needs $100 of dental work, he gets only $75, the maximum. If another child needs $25 of dental work, he gets $25. There are no mechanics to pool that unspent $50.

It has not been possible to achieve a program on an open panel basis in California. Another shortcoming is that no funds are available for dental research.

The Fund has undertaken a study of quantitative data broken down by age groups and plan. The American Dental Association has joined in this study. The data will be available for fiscal accounting and for research agencies. Among the subjects being investigated are the following: maintenance costs for varying age groups; the backlog of need; geographical differences; percentage of referrals for orthodontic service, and the relative value of the various plans now in effect.

International Longshoremen's and Warehousemen's Union-Pacific Maritime Association Welfare Fund, San Francisco, Calif.

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Auxiliary groups

The training of dental hygienists in the Royal Air Force

P. A. Askew. *D.Practitioner* 7:264-266 May 1957

The facilities for training dental hygienists for the Royal Air Force are housed at the Dental Training Establishment at Halton, England. They consist of a dental hygiene clinic, lecture room, changing room, instructors' rest room, office, surgery, lecture room, a room equipped for showing 16 mm. sound films and slides, and another lecture room when required. The clinic has chairs and equipment for 14 working places. The training staff consists of one specialist dental officer, one dental hygienist commissioned in the Dental Section of the Medical Technician Branch, and one noncommissioned officer dental hygienist. The aim of the training is to produce dental hygienists who are proficient in the practical aspects of their work and who are keen protagonists of dental health education.

The training covers 43 weeks, of which the first 12 weeks are devoted to the same studies as for dental surgery attendants, thus giving the dental hygienist a general knowledge of service matters and a basic knowledge of chairside work. There may be a slight break between this part of the training and the next; during this break the trainee is employed as a dental surgery attendant at a dental center. There follow 31 weeks of dental hygienist training as theoretical and practical instruction alternate.

The first nine weeks are devoted to general anatomy, physiology, tooth anatomy and dental histology. While trainees absorb this knowledge, their practical training progresses. To improve their manual dexterity, they are taught tooth carving and are introduced to the hygienist's initial armamentarium. The use of these instruments is taught first by using a door handle on which are bands of hard enamel paint so that the trainee can practice the various rests, grasps and movements by which the various scalers can be used effectively and safely. The trainee then progresses to work on a dummy head, in which extracted teeth are mounted. These teeth are painted with varnish, and oxyphosphate cement is applied to simulate stain and calculus. The trainee practices removing these substances and polishing the tooth surfaces with brush, rubber cup and pumice. He also learns to polish interproximally with linen strips and floss silk and pumice.

The trainee is taught about the toothbrush and its use, and how to instruct the patient in the use of the toothbrush, floss silk and wood points.

At the end of the twenty-first week of training, the trainee is examined. The successful candidate continues with the study of the anatomy of the head, bacteriology, dental caries, general dental pathology and a little materia medica. He starts his clinical practice. At the end of about the twenty-ninth week he is examined again. If he passes, he attends lectures on oral infection and

general health, elementary roentgenology, diet and nutrition, general first aid, preventive dentistry, dentistry for children, oral hygiene and dental health education. His practical work includes the treatment of children.

Passing of the R.A.F. trade test qualifies the dental hygienist for the certificate of proficiency in oral hygiene of the Ministry of Health.

▼ Practice administration

The 1956 survey of dental practice. VIII. Dentist busyness

J.A.D.A. 54:856-860 June 1957

The Bureau of Economic Research and Statistics of the American Dental Association reports on the responses of dentists to two questions in a questionnaire, designed to determine how busy dentists were in 1955 and their ability to meet the existing demand for dental care.

The median length of time that an average dental patient had to wait for an initial appointment of a series (excluding emergency situations) was one week. The mean was 12.8 days.

About one of every five responding dentists said he was too busy to accommodate all persons who wanted dental care; one of every five felt that he was overworked; nearly half stated there was a "good balance" between demand for care and their ability to meet it, and one sixth desired more patients. The mean number of additional patients desired by those whose practice was insufficiently busy was 285.

The average wait for an appointment was longest in the Far West, where also was the lowest proportion of dentists desiring more patients. The length of wait was the shortest in the Middle East where a fourth of all independent dentists indicated they did not have as many patients as they would have liked.

Specialists as a group reported an average wait of 10.9 days compared to 13.1 days for general practitioners. The shortest average waiting period, 2.6 days, was reported by oral surgeons, followed by prosthodontists with 5.2 days. The other three specialties of private dental practice —orthodontics, pedodontics and periodontics— all had average waits of about 16 days.

More oral surgeons (29.0 per cent) and prosthodontists (27.3 per cent) desired additional patients than did dentists in other types of practice. These types of practitioners also reported being too busy less frequently.

The mean number of days of waiting for an appointment was reported as 13.6 in 1952 compared with 12.8 in 1955. In 1952, 15.4 per cent of dentists desired more patients, compared with 16.2 per cent in 1955.

It is evident that during the three-year period ending in 1955 dentists of the United States improved to some extent their ability to meet the demands for dental care. The individual dentist has increased his patient load more than enough to offset the increase in demand for dental care.

222 East Superior Street, Chicago 11, Ill.

▼ Forensic dentistry

Around the world

Claudius F. Mayer. *Mil.Med.* 120:454-456 June 1957

There is no doubt that Führer Hitler is dead. His dentist, who was taken prisoner by the Russians, remembered the bridgework which he prepared for the Führer and for Eva Braun in July 1944. In 1945, after the fall of Berlin, Dr. Echtmann, the dentist, was ordered to describe the bridgework of Hitler for three Russian dentists who then produced a number of unidentified skulls, in two of which Echtmann recognized his prosthetic work on Hitler and Eva Braun. He was then sent immediately to the Vorkuta concentration camp in Siberia. Recently the dentist returned from Russia and he deposited his statement under oath in the Court of Berchtesgaden where Hitler was then officially declared dead.

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Court establishes precedent in allowing dentist's claim

Pennsylvania D.J. 24:13 March 1957

A judicial precedent has been established in Pennsylvania which will be of benefit to all practicing dentists in the Commonwealth confronted with the problem of collecting dental fees from a decedent's estate.

The dentist had completed considerable work on a patient who died suddenly from a cause unrelated to the dental problem. Heretofore in Pennsylvania, claims for dental service against an estate were lumped with commercial claims, with all such creditors being paid pro rata according to the solvency of the estate. Physicians, nurses and hospitals, on the other hand, are paid in full ahead of all other claimants before the pro rata rule applies.

A Pennsylvania court has now ruled that the claim of a dentist for professional services has a preferential status and must be paid in full even though the estate is insolvent.

In this instance, a dentist and various physicians had rendered services to the decedent within six months prior to his death. The executors of the estate had paid the bills of the physicians as preferred claims but had refused to pay the dental bill because of the lack of a precedent. The court directed payment of the dental bill in full, giving the dental bill status equal to the medical bills.

The court stated in part:

"The estate being insolvent the question is submitted whether the claim of a dentist for professional services to the decedent, and for prophylaxis, drugs, dental bridgework (some of the latter of which was completed and some remained uncompleted at the decedent's death) and a visit to the decedent within six months of his death, has a preferential status under the provisions of Section 622 of the Fiduciaries Act of 1949.

"Although a claim such as is here presented is not given a preference by specific language of the act, I am of the opinion that all of the items for which the claim is made would fall within a reasonable interpretation of: 'medicines furnished to him within six months of his death [and] of medical or nursing services performed for him within that time. . . .'

"The professional services of the dentist in this case, and the materials furnished by him to the decedent, are presumed to have been furnished for the purpose of contributing to the decedent's well-being, care and treatment, although perhaps only indirectly, to the prolonging of his life. The claim is therefore allowed."

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Hospital dental service

The hospital cleft palate center: surgical problems and procedures

Leo Stern, Jr., and Stanley L. Lane.
New York D.J. 23:245-250 June-July 1957

The Cleft Palate Center of the Mount Sinai Hospital was formally established in 1953 as a professional group embracing the specialty services of the following: oral surgery, plastic surgery, orthodontics, prosthodontics, operative dentistry, pediatrics, otolaryngology, audiology, speech pathology and therapy, psychiatry, psychology, anesthesiology, social service and nursing.

A long-range program of clinical research and rehabilitation is in progress, with I.B.M. records and statistical data being compiled for future analysis and study.

An appointed director and a coordinating secretary control and direct the activities of the group. The group was established through the initiative of dentists and continues to function as a community and state diagnostic and treatment center. An orthodontist is administrative director.

The role of the psychiatrist in this group organization is crucial. It is often discovered that the parents of the child with cleft palate are disturbed and need guidance before the child's treatment can succeed.

Group consultation affords an insight into diverse points of view and restrains each specialist from overzealously plying his mode of therapy.

The surgeon in the past had been inclined to close every cleft regardless of functional advantage; modern concepts favor prosthetic repair in certain difficult instances, or a combination of surgery and prosthesis. The timing of surgical intervention frequently is modified by orthodontic considerations. Speech proficiency and psychic health are the critical considerations and may outweigh preferences for surgery or prosthesis, or for early or late repair.

745 Fifth Avenue, New York, N. Y.

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Organization

Organization and administration of the Norwegian Dental Association and dental care in Norway

Knut Gard. *Irish D.Rev.* 2:63-70 Winter 1956-57

In Norway dentists in public employment obtain security through permanent employment, with agreements covering salaries and working conditions, plus pensions. Satisfactory agreements have been obtained from the states and counties governing salaries, working conditions and pensions for school dentists. A system of relief provides aid up to $280 annually. A special pension fund provides old age pensions up to $462 a year, with pensions for children and widows up to $924 a year.

All members of the Norwegian Dental Association must be members of the pension fund, which also provides for invalid or accident pensions within four years of qualifying. A special pension fund grants an annual sum of $98 to all members that have reached 65 years of age, and guarantees $98 annually to widows and children for five years if the member dies before reaching 65 years.

The basic purpose of a dental association has been and always will be to promote better education.

The daily management of the Norwegian Dental Association is the responsibility of a Board of Trustees elected for two years. The local associations elect members to a Representative Board which meets once a year. Under the constitution this Representative Board controls the Board of Trustees. Every second year a General Assembly is held where all members have a right to be present and to vote. The General Assembly elects five of the eight members of the Board of Trustees, the remaining three members being elected by and among the members of the Representative Board. Only the General Assembly may alter the constitution.

The Norwegian Dental Association has more than 1,800 members. It has a secretary general and a secretary, both dentists and employed full time. The main duty of the secretary general is to apply policy. He conducts the daily direction of the organization, is present at discussions as the organization's representative, and places the organization's requests and demands before the authorities.

In 1910 the first two school dental clinics were established in Norway, in the capital and in the second largest town. The Storting in 1917 granted a state subsidy for school dental care, and ordered all towns to introduce such a service before 1927. Eighty per cent of all school children are treated regularly each year in school dental clinics. Although school dental care is organized by each municipality, the state pays a quarter of the expenses for salaries in rural districts and an eighth of such expenses in towns. The service provides dental care for children from 7 to 14 years old. Between 500 and 600 dentists are employed in school dental care, but only about 200 are full time.

Norway at present has too few dentists, but 500 Norwegians are at present studying dentistry abroad and a second dental school is to be built in Bergen, the second largest city. Only office girls are employed in dental offices, there being no organized training for auxiliaries.

School dental care as a rule is provided only for permanent teeth. The school dentists can manage simple orthodontic treatment, but only the large municipalities have separate orthodontic departments. In some counties adolescents up to age 18 receive free dental treatment.

Incognitogaten 17, Oslo, Norway

Armamentarium

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Materials

A new kind of articulating paper

(Ein neuartiges Artikulationspapier)

Jean Bausch. *Benda Bl.* 47:1-4 Feb. 1957

In German dental practice, a new kind of articulating paper of minimum thickness with perforated sections and a progressive color gradation is used frequently.

Most of the customary types of articulating paper obtain markings which often have been found to be deceptive because they disclose only the points of interference in centric and eccentric relations.

With the perforated "BK" articulation paper, not only are the markings of isolated high spots obtained but all the contact points appear in different shades of color. This makes it easier to determine whether the upper or the lower teeth should be reduced at the points of contact.

A study of the markings shows the contact of the buccal and lingual cusps of the upper and lower bicuspids and molars, and also that of incisors and cuspids on the working side. Markings, distinguishable by their shades, appear on the lingual cusps of upper teeth and on the buccal cusps of lower teeth.

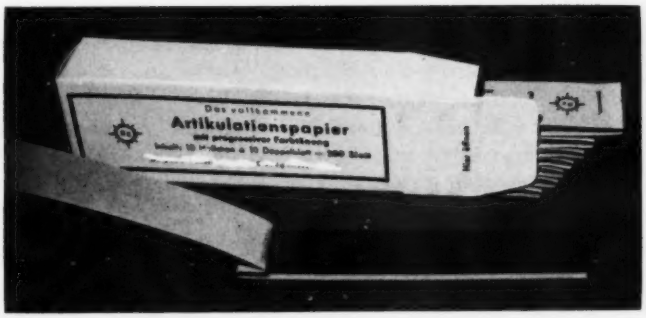
The marking process and the grinding procedure in the construction of partial and complete dentures, fixed and removable bridges, crowns and inlays, are facilitated by the use of this type of articulating paper. When periodontal disease is present, the possibility of a traumatic malocclusion is lessened by use of the paper.

Sometimes a prosthesis will meet all the requirements of correct anatomy and occlusion except for contact points. The determination of the form and position of all contact points is extremely important in the construction of all types of tooth restorations. Only when these contact points are correctly established and preserved will the dental arches be equilibrated.

Testing with the "BK" articulating paper permits the determination of form and position of all contact points. Necessary relief can be obtained before the arrangement of the artificial teeth. Such a procedure is not only time-saving but makes possible a balanced occlusion without an increase of the incisal guide angle.

"BK" articulating paper is available in stitched booklets containing ten sheets and in packages containing ten booklets. Each sheet is perforated, and it is possible to use a part of a sheet for each single test. Small sections of the paper can be handled with a pair of tweezers, and the dentist's fingers stay free of color. The blue coloring matter, made of vegetable wax of the highest quality, is insoluble in water. This kind of articulating

Left: Establishing of the contact points in the posterior region with half a sheet of the "BK" articulation paper. Right: "BK" articulation paper in booklet and package



paper, therefore, can be used in dry and wet media. In most instances, dentists will find that one sheet will be sufficient to establish all contact points. Repeated testing is unnecessary.

The quality of the "BK" paper and its usefulness in dental practice has been evaluated by the Council on Dental Products of the German Dental Association (Förderungsausschuss zahnheilkundlicher Neuerungen). Their examination resulted in acceptance and the listing of this paper among the commercial products which are accepted by the council and by the dental societies in Germany.

Neusser Platz 2, Cologne 6, Germany

Condensation of amalgam with ultrasonic vibration—a progress report

E. W. Skinner and G. T. Mitzera. *Internat.A.D. Res.Preprinted Abs.* 114 March 21, 1957

Amalgam alloy and mercury were triturated as usual and then condensed into cylindrical molds for testing purposes by means of ultrasonic vibrations (29,000 cycles per second). The vibrations were applied through a flat, circular point 3 mm. in diameter, held with light pressure against the amalgam mass in the mold. The amalgam was "wrung dry" of mercury and added to the mold in large increments. Nine different amplitudes of vibration were employed. Three different commercial amalgam alloys of varying particle size were used.

Alloy A was made up of small, uniform particles; alloy B was graded as to particle size and area, and alloy C was composed of comparatively large, uniform particles. With alloy B the dimensional changes and flow values were comparable to those obtained with the usual technic, and the crushing strengths were greater than those usually obtained, particularly after the first hour of hardening. With the other two alloys a tendency was noted for the amalgam to exhibit a shrinkage with the ultrasonic technic, with a smaller increase in strength over the specimens condensed by hand. Differences in the properties caused by differences in vibration amplitude were of academic interest only. Future experiments will be concerned with the technic as well as the theoretical considerations with the view of obtaining a more universally useful method.

Northwestern University Dental School, Chicago, Ill.

Changes in agar-agar type duplicating material and agar-agar on heating and storage

Peter M. Margetis and William C. Hansen. *J.A.D.A.* 54:737-745 June 1957

Although extensive data have been published on the physical properties of the agar-agar type of oral impression materials, there is a shortage of published data on the physical properties of the reversible agar-agar type of duplicating compounds. Experiments were undertaken to observe and define more clearly the effect of heating and storage on three properties (pH, viscosity, and crushing time under a constant load) of the agar-agar type of duplicating compound.

When agar-agar type of duplicating material was stored at about 52° C. as recommended by the manufacturers, the viscosity increased considerably whereas the crushing time decreased.

When this material was reheated daily by immersion in boiling water, the crushing time decreased slowly, but there was no correlation between the change in viscosity and the change in pH.

When the material was stored undisturbed at 52° C., gelation occurred within from six to nine days.

The changes in the physical properties of the agar-agar type of duplicating compound stored at 52° C. compared with the changes in the material subjected to the heating-gelation cycle may be explained by postulating increased intramolecular and intermolecular hydrogen bonding.

Office of the Surgeon General, Department of the Army, Washington, D.C.

Operative dentistry

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Inlays and fillings

Retention of cervical inlays

(Präparation von Cervikal-Gussfüllungen)

H. M. Pickard. *Neues Zahnhk.* 3:179-180, 1957

There is a type of cervical inlay which presents a peculiar problem. Inlays inserted into abrasion cavities which occur frequently at the necks of cuspids or bicuspids are of this type, and often the teeth are fully functional and are important in stabilizing dentures.

The cervical abrasion cavity is usually caries-free, or only slightly carious. It is often shallow, with poorly defined margins, and presents a problem in retention and few possibilities of extension to attain retentive form. The transverse abrasion which caused the formation of such a cavity is a potent factor in dislodging customary inlays, although amalgam restorations may hold in instances in which adequate undercuts can be made.

Cervical inlays may be retained through the use of two small pins inserted into the depth of the cavity. This technic, however, has the following disadvantages: (1) the pins present a constant and considerable threat to the pulp, and (2) the pins must be positioned parallel to each other which in close proximity to the pulp is difficult to achieve.

A simple alternative design involves the use of only one easily accessible pin.

The abrasion cavities have a typical form. Their deepest part is toward the coronal portion and it rises steeply toward the buccal surface of the crown. The mesial, distal and cervical margins fade smoothly into adjacent tooth surfaces.

The first step in preparation of this cavity type is to accentuate the original form by use of disks, stones or diamond instruments. The prepared

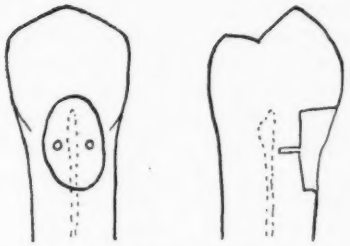

Figure 1 The customary two-pin technic

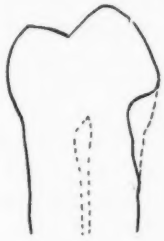

Figure 2 Characteristic form of an abrasion cavity

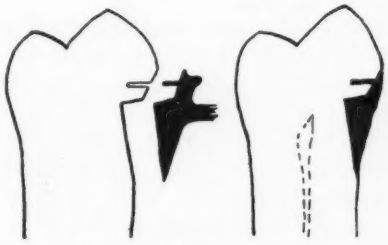

Figure 3 One-pin technic

cavity consists essentially of two sharply angled plane surfaces. If a semilunar gingival wall can be defined, so much the better, but it is not essential. No further definition of the mesial and distal borders is attempted; a marginal bevel may be applied if necessary.

Retention is now provided by producing with a disk a third small plane surface on the buccal crown immediately above and adjacent to the cavity. This surface should be almost as wide as the cavity and should expose the coronal dentin. From the center of the cavity, a horizontal pinhole is drilled about 2.5 mm. deep with a small round bur, to accommodate a short iridium-platinum pin, 0.025 inch in diameter. This pin is flattened on its outer part and the hole is adjusted to provide an easy fit.

The direct impression technic is used with inlay wax. The adherence of the wax to the pin is obtained by momentarily touching the pin with a hot instrument. The peripheral margins are given a knife-edge and, when the trimming is completed, the pattern is sprued and withdrawn.

The cast inlay, after insertion in the cavity, will show a surprising stability almost immediately. The sprue may be retained for ease of manipulation. Marginal trimming, removal of excess material in the vicinity of the pin, and preliminary polishing are carried out in the customary manner.

The inlay should not restore the full convexity of the tooth. Such a fullness is not only unnecessary but would provide a greater chance for dislodgement and produce stagnation areas where secondary caries could develop.

The outer convexity of the cervical inlay should rather be somewhat flattened to make a higher degree of cleansing possible. Further abrasion will be insignificant.

This type of retentive cervical inlay has the following advantages: (1) the cavity preparation is simple and rapid; (2) the pin is easily accessible, and although directed centrally, it is positioned where an ample tooth substance exists, and (3) the problem of the difficult parallelization does not arise.

Cervical inlays are not indicated for routine restorations. In all instances in which they were used, inadvertent dislodgements did not occur. Attempts to remove these inlays provided convincing evidence of their stability.

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The silicate cements: a common-sense approach

Ben Dent. *Fort.Rev.Chicago D.Soc.* 33:13-18, 28-29 June 15, 1957

Among the causes of failure to match the tooth color with silicate cement fillings are the following: color blindness of the dentist; use of plastic shade guides; failure to give the teeth a prophylaxis before attempting to match color; unclean slabs and spatulas; failure to use a bone spatula with a ground glass slab; failure when using alpha type silicates to mix within a definite temperature range; grayish discoloration from zinc oxide and eugenol used as a base or liner under the silicate filling; excessive dehydration of the cavity; a tooth so permeated by stains that a correct color match is an impossibility, and the presence of varnish or cavity liner on the margins of the cavity.

Many of the factors which cause discoloration also cause the early loss of the filling. All silicate powders must be kept tightly stoppered. Silicate powders and liquids should be kept entirely away from all medicaments. A silicate mixed with the alpha type liquid is so sensitive that even the air circulating in the room will dehydrate the wet mix, hasten the gel and, in all probability, result in a broken set. This type of silicate should not be mixed with an electric fan in operation. Steam from water boiling in a sterilizer can affect adversely the setting time and gel of an alpha type silicate.

If the silicate cement is mixed on a slab chilled below the dew point, moisture will be incorporated in the mix and the resulting filling will disintegrate rapidly. Use of a rubber dam prevents failure of the silicate filling through moisture reaching the filling too soon. Too much powder in the mix or mixing longer than the required time breaks the gel and produces a filling which will last only a short time.

Pulp irritation and pulp death under silicate cement fillings can be attributed to pressure, phosphoric acid penetration, and drugs used in the cavity in an attempt at sterilization.

Whereas the alpha type liquid of the average cement has a pH of 1.6, the sigma type liquid has a pH of 6.3 and thus results in only a slight pulpal irritation to stimulate the production of secondary dentin.

The usual varnishes and liners offer little or no protection to the pulp. Until recently, the only effective liner has been calcium hydroxide and even this is not so effective in deep cavities. Manufacturers have now developed polyantibiotic cements which are mixed with a sigma type liquid and which produce only a slight irritation to the pulp. A pronounced bactericidal action is produced on insertion of the polyantibiotic cement into the cavity. The prolonged bactericidal action during the setting process is also

helpful. This cement is used for bases, liners, pulp caps, temporary fillings and cementation of inlays, crowns and bridges. No drug, chemical, liner or varnish should be used when the poly-antibiotic cement is placed in a cavity.

The bibliography lists 55 references.

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On mercury from dental amalgam: its toxic and allergic effects and some comments on occupational hygiene

Karl O. Frykholm. *Acta odont.scandinav.* 15, Supp. 22:5-108, 1957

In numerous early reports concerning the impairment of health as a possible consequence of mercury evolution during the insertion of silver and copper amalgam restorations, highly contradictory opinions are expressed. To obtain a comprehensive picture of the patient's exposure to mercury from amalgam, the author performed a number of experiments.

The exposure to mercury vapor during the insertion of silver and copper amalgam fillings was measured at one minute intervals with a General Electric instantaneous vapor detector. The solubility in saliva and gastric juice of newly made and old specimens of silver and copper amalgam was determined with the aid of chemical and radiometric analyses. The possible migration of mercury via the dentinal tubules to the pulp tissue was investigated by the aid of autoroentgenography of sectioned teeth and by radiometric analysis of pulp tissue smears. The deposition of mercury in the kidneys, liver, spleen, brain and femoral muscle was investigated in experiments on dogs and monkeys that were killed at certain intervals after the insertion of amalgam fillings. The excretion of mercury was investigated in experiments on dogs and human subjects.

The insertion of amalgam restorations involves a certain exposure to mercury. This exposure is mainly caused by the evolution of mercury during the insertion of fillings. Swallowing of fresh amalgam may play a part, whereas the continuous abrasion seems to add little to the total exposure. Copper amalgam, being less stable, may give rise to a somewhat greater exposure than does silver amalgam.

According to present knowledge in the fields of occupational hygiene and medicine, the estimated exposure is not sufficient to cause mercury poisoning in a conventional sense. The degree of exposure, however, may suffice to bring about allergic manifestations in patients highly sensitive to mercury.

The nurse is exposed to considerably higher concentrations of mercury vapor than is the dentist or the patient, especially during certain phases of the work. Mercury allergy has arisen in some people after many years of work in the dental profession. No clinically established instances of mercury poisoning among dental staffs have been recorded in Sweden, but allergic trouble and symptoms of neurasthenia which are difficult to assess make precautionary measures desirable to reduce the exposure to mercury vapors in dental premises to the lowest possible level. The dental premises must be large enough, and equipped with efficient ventilation and a free supply of fresh air. Tables and floors should have a hard polished surface without fissures, and with as few joints as possible.

Even if work with amalgam is performed daily for decades, there is, under normal conditions, no risk of chronic mercury poisoning, and instances of mercury allergy are rare.

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Preventive and public health dentistry

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Hygiene and prophylaxis

Study of dentifrices: their structure and application
(Contribución al estudio de los dentífricos: su estructura y aplicación)

C. Martins Santos and S. Santos Oliveira. *Odont.Uruguaya* 10:151-155 July-Aug. 1956

Research studies on dentifrices of various preparations and brands were carried out in two series. In the first, of 20 dentifrices analyzed, 19 were in paste form and one was in liquid form. One of the pastes contained vitamin C. The following conclusions were reached:

1. All the paste dentifrices yielded residues nonsoluble in water, in different percentages. The residues consisted of abrasive substances (calcium carbonate, aluminum hydroxide and others).

2. Most of the dentifrices were alkaline. Few were either acid or with a neutral pH.

3. From a didactic point of view, indications and contraindications of certain dentifrices could be established by classifying the dentifrices according to their percentage of residues nonsoluble in water and of their alkalinity or acidity.

4. Vitamin C added to the dentifrices had no beneficial effect on the oral tissues.

The second series of studies was on the bacteriostatic power of paste, powder and liquid dentifrices against *Staphylococcus pyogenes* var. *aureus* and *Lactobacillus acidophilus*. The following conclusions were reached:

1. Some dentifrices have a high bacteriostatic power which others do not have.

2. The dentifrices with high bacteriostatic power inhibit also the bacterial flora which protects the oral environment.

3. The use of dentifrices whose range of inhibition of bacteria is small or nil cannot be recommended until the biologic and chemical properties of the dentifrices are investigated.

4. The use of dentifrices which favor an exaggerated development of lactobacilli and probably even the use of those that inhibit lactobacilli is contraindicated.

5. None of the dentifrices which were analyzed in these studies should be used for children. Swallowing the dentifrices may cause gastritis. All the dentifrices that were analyzed are actually culture media. They cause irritation to the oral tissues and inhibition of the flora which protects the oral environment. They contain allergenic substances in a large quantity.

Bacteriologic evaluation of tooth pastes
(Bakteriologische Wertbestimmung von Zahnpaste)

H. Kliewe. *Zahnärztl.Praxis* 8:3-4 Feb. 15, 1957

At the Institute for Public Hygiene of the University of Mainz, Germany, several brands of tooth pastes have been examined bacteriologically to determine their effect in regard to specific claims made by the manufacturers.

In preliminary tests it was established whether injury to the mucous membrane or other oral tissues could be produced by constant use of these tooth pastes. Pathologic alterations caused by tooth pastes containing abrasive substances were classified and recorded. In several instances, fissures in cementum and dentin were observed.

By serial dilution and agar diffusion tests, the effect of tooth pastes on the following microorganisms, isolated from the oral cavity, was evaluated: (1) *Lactobacillus acidophilus;* (2) *Clostridium haemolysans;* (3) hemolytic streptococcus; (4) anhemolytic streptococcus; (5) *Staphylococcus pyogenes* var. *albus;* (6) *Staph. pyogenes* var. *aureus;* (7) gram-negative bacteria; (8) Corynebacterium; (9) bacteria of the coli-aerogenes group; (10) putrefactive enzymes and (11) yeast fungi.

The influence of human saliva on the bacteriostatic effect (if present) was determined.

In the tooth pastes examined (containing penicillin, chlorophyll, specific foaming elements or stannous fluoride) none of the following adver-

tised claims could be verified: (1) removal of bacterial plaque from tooth surfaces; (2) decrease in caries frequency, and (3) prevention of periodontal disease.

The results of this investigation, naming the brands of tooth pastes examined, were forwarded to German dental societies and dental colleges, because it is the duty of the dental profession to contradict the misleading claims made by manufacturers of dentifrices as well as to give information on oral hygiene to patients and the general public.

Hygiene-Institut, University of Mainz, Germany

The bleaching of teeth

A. M. Barr. *New Zealand D.J.* 53:87-88 April 1957

The drug commonly used to bleach teeth is hydrogen peroxide, 30 per cent. The solution, which is acid, should be neutralized before use by the addition of one drop of 5 per cent solution of sodium bicarbonate to ten drops of hydrogen peroxide, 30 per cent.

A rubber dam must be used to protect the gingival tissues and the oral mucous membrane. A small quantity of hydrogen peroxide, 30 per cent, is placed in a dappen dish. An applicator of gold, platinum, ivory, glass or vulcanite is used. The drug should not make contact with steel. All fillings are removed, and access is gained to the pulp chamber. All root canal filling material is removed from the pulp chamber and the canal is cleared for a distance of 2 mm. above the cervix of the tooth. Any surface discoloration of dentin is removed with a bur. The cavity is dehydrated either with chloroform or ethyl alcohol solution (1:3).

By means of the applicator or a syringe, a little hydrogen peroxide, 30 per cent, is run on to wisps of cotton wool in the pulp chamber, and the tooth is exposed to a no. 1 photo flood lamp for five minutes. The wisps of cotton wool are removed, and the pulp chamber dried out thoroughly. The applications and the exposure to intense light are repeated until the tooth has had four to six treatments of five minutes each.

A small pledget of cotton wool dampened with hydrogen peroxide, 30 per cent, is sealed into the pulp chamber with gutta-percha and zinc phosphate cement. Care is taken to obtain a close seal to prevent saliva seeping into the pulp chamber. If necessary, the procedure may be repeated after 48 hours.

When the treatment is completed, an 80 per cent solution of chloral hydrate is used to restore translucence to the tooth. It is applied to the bleached, dry pulp chamber for a few minutes, after which the permanent restorations are inserted.

If Pyrozone, a 25 per cent solution of hydrogen peroxide in ether, is used in place of hydrogen peroxide, 30 per cent, the treatment is carried out in the same way. Pyrozone penetrates more than hydrogen peroxide, 30 per cent, but is highly dangerous and its vapors may annoy the patient.

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Toothbrush effectiveness: relative cleansing ability of four toothbrushes of different design

Charles G. Maurice and Donald A. Wallace. *Illinois D.J.* 26:286-292 May 1957

Correct use of a good toothbrush is the most important measure in home care of the mouth. Although the dental profession recognizes that the toothbrush properly used is an important therapeutic agent, there is less agreement as to the kind of toothbrush which should be used.

An experiment was conducted to determine the relative tooth cleansing effectiveness of four different types of toothbrushes, when used by a group of 59 members of the first year class at the University of Illinois College of Dentistry who had had no special instruction in toothbrushing. Brushes A, B and C had nylon filaments; Brush A had two rows, with six tufts per row; Brush B, three rows, with six tufts per row; Brush C, four rows, with 12 tufts per row. Brush D had four rows of natural bristles with from 12 to 13 tufts per row.

Each student used each brush for a period of four weeks. Prior to receiving a brush each student was given a prophylaxis. A visual inspection

was conducted at the end of each four week period, at which time each participant rinsed his mouth with a red disclosing solution consisting of 450 mg. merbromin, one drop of peppermint oil and distilled water to make 100 ml. The stained areas and other pertinent information were recorded by one investigator who did not know which brush the student had been using. Brushes were assigned to the students in a definite order. For example, the first student to report used brushes B, A, C and D in that order, for four weeks each. The second student followed the order A, C, D and B, and so forth. Two widely marketed brands of tooth paste were used. Participants were asked to continue their current brushing habits.

The four charts resulting from the inspection of each student's teeth after each four week toothbrushing period were arranged in descending order of over-all tooth cleanliness.

The medium nylon brush with two rows was the most effective in keeping teeth clean. Most of the participants preferred the nylon brushes to the soft natural bristle brush. The observations suggest indirectly that the manner in which the brush is used is more important than is the care in selection of the brush.

Mouth cleanliness in the participants varied considerably. Irrespective of which brush was used, some mouths tended to be consistently dirty, some consistently clean, and some consistently at neither extreme. The authors hope to undertake a study of factors other than toothbrushing which determine mouth cleanliness.

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Effect on dental caries of a dentifrice containing stannous fluoride and dicalcium phosphate

Joseph C. Muhler. *J.D.Res.* 36:399-402 June 1957

Clinical tests had shown that a dentifrice containing sodium fluoride with the conventional polishing agent, dicalcium phosphate or calcium carbonate, was ineffective in reducing the dental caries rate. The apparently greater activity of stannous fluoride pointed to the possibility that this compound might be effective even in a dentifrice prepared with dicalcium phosphate. The present study investigated this possibility.

Three groups of children ranging in age from 6 to 15 years were used. The children in group 1 used a nonfluoride dentifrice with dicalcium phosphate. Group 2 used an identifical dentifrice except that it contained 0.4 per cent stannous fluoride. Group 3 used a dentifrice with heat-treated calcium phosphate as the polishing agent and 0.2 per cent sodium fluoride plus stannous gluconate.

After six months and one year of unsupervised use of a dentifrice containing stannous fluoride and dicalcium phosphate, no significant reductions in the dental caries rates were found. Similarly, when both sodium fluoride and stannous gluconate were added to a dentifrice containing heat-treated calcium orthophosphate, no significant reduction in dental caries was found. These data suggest that not only is the fluoride compound of importance in determining the anticariogenic effectiveness of fluoride dentifrices, but also the nature of the polishing agent must be considered.

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Oral prophylaxis

C. N. Sanger. *J.Wisconsin D.Soc.* 33:109-110 May 1957

Dental prophylaxis is a procedure for removing calcareous spurs, stains and other accretions, above and below the gingiva, by the use of scalers and polishing instruments, and the removal of overhanging restorations. The service consists of two parts: (1) scaling of the gingival and subgingival root surfaces, and (2) polishing crowns and exposed root surfaces.

In the first 20 years of a patient's life, polishing has the greatest effect, since caries takes its greatest toll in those years. Patients more than 20 years old tend to show some immunity to dental decay, and periodontal disease becomes more prevalent; at this time, scaling takes precedence over polishing. Also at this age accumulations of calculus seem to increase.

Child patients usually are recalled twice yearly for prophylaxis, adult patients at least once a year.

The dentist should establish an efficient pattern in the performance of the prophylaxis. The accepted method is routinely to start on the same tooth and the same quadrant, progressing tooth by tooth around the arch. This pattern allows little room for error. Sharp instruments should be used. Heavy scalers are used for heavy work and light scalers for feel and finish. Instruments are inserted with care and with "pen" or "whole hand" grasp. A finger fulcrum is established and, with wrist rotation, the instrument is pulled toward the load. The fingers serve to grasp and act as a pivot rest. The wrist rotates and moves the entire hand. Efficient contact of the instrument with the tooth is established. Deep pockets are fully scaled to ascertain their depth and outline. Each surface is scaled until no resistance is registered. A good blood clot should remain in the deeper sulcus.

The dentist may have to re-evaluate his fees for prophylaxis. If amalgam restorations save the crowns of teeth and if the fees for these are based on time, the same applies to prophylaxis time to save the supporting structures of the teeth.

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▼ Statistical research

Oral health survey of 29,551 Kansas City, Missouri, elementary school children

J. E. Wells, W. J. Carter, H. R. Englander and M. E. Greer. *Internat.A.D.Res.Preprinted Abs.* 78 March 21, 1957

An oral examination of 29,551 elementary school children in Kansas City, Mo., was made with mouth mirror and explorer, using a good light source. The DMF index was used to assess the dental caries experience in permanent teeth and the def index was used in the examination of deciduous teeth. Gingivitis was determined and recorded by the PMA method. Malocclusion was determined according to Angle's classification.

The incidence of gingivitis, dental caries, oral hygiene and malocclusion in 29,551 white and colored children 6 to 12 years old is reported. The average amount of gingivitis was about 1.89 papillae, 1.83 marginal, and 0.12 attached, or a total of 3.84 PMA unit affected per child. Eighty per cent of the children had one or more decayed deciduous teeth and 83 per cent had one or more decayed permanent teeth. The average amount of dental caries was 3.68 DMF teeth and 3.73 def teeth. Twenty-eight per cent of the children had malocclusions and 25 per cent exhibited poor oral hygiene.

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▼ Epidemiology

Observations on the frequency of caries in children of rural districts in Southern Finland (Havaintoja hammasmädän esiintymisestä Etelä-Suomen maaseudun lapsilla)

Kalevi Koski, Johannes Haataja and Jaakko Kilberg. *Suomen hammaslääk.toim.* 53:17-25 March 1957

The Group for Study of Growth and Development of the Finnish Child in the summer of 1955 examined the teeth of 1,140 children (549 boys and 591 girls) from 0 to 14 years old residing in seven different localities in Southern Finland.

Carious teeth were found even in infants 12 months old. From five years upward practically every child had one or several carious teeth. There was no consistent difference between the sexes. The incidence of caries seemed to differ (in some instances, significantly) among the localities. There appeared to be less caries among children whose first years of life were during the war than among those of the postwar period.

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Incidence of dental caries and periodontosis among the population of a rural district
(Zabolevaemostj kariesom i amfodontozom [paradontozom] naselenija seljskavo vratshebnavo utshastka)

V. S. Savina. *Stomat.,Moscow* 36:68-69 Jan.-Feb. 1957

To determine the environmental influence on tooth decay a dental survey was conducted in which 1,510 persons of a village were examined. The village is situated in the north of Stavropol district, in the region of the steppes, with two kolkhozes (collective farms) in its territory. The southern kolkhoz had a better water supply and more orchards and fruit trees than the northern kolkhoz; the population was better off and their diet contained sufficient fruit and vegetables. The survey showed that the caries incidence was 20 per cent less than among those in the northern kolkhoz.

All members of families were examined. Decayed and missing teeth were considered instances of caries. Teeth lost because of luxation, however, were scored as instances of periodontosis.

Farm workers had a lower percentage of caries and periodontosis than intellectual workers. The shepherds in the steppes had a considerably higher caries incidence, which seemingly was caused by their improper diet (only dried food) and different sorts of drinking water.

Of 609 men, 37 per cent had caries-infected teeth and 14.5 per cent had periodontosis. Of 766 women, 39.3 per cent had carious teeth and 12.7 per cent had periodontosis. Of 135 children, 15 per cent had carious teeth and none had periodontosis.

The incidence of caries and periodontosis increased with the pregnancies in women but this could be related to the observed increase of caries with advancing age.

Of 505 multigravida women, 50.2 per cent had carious teeth and 14.2 per cent had periodontosis. Of 58 primigravida women, 35.6 per cent had carious teeth and 4.6 per cent, periodontosis. Of 46 nullipara women, 3.7 per cent had carious teeth and 1.9 per cent had periodontosis.

Of 135 children up to 15 years old, 12.0 per cent had carious teeth and none had periodontosis. Of 140 persons from 15 to 20 years old, 22.3 per cent had carious teeth and none had periodontosis. Of 289 persons from 21 to 30 years old, 18.0 per cent had caries and 4.0 per cent had periodontosis. Of 271 persons from 31 to 40 years old, 35.5 per cent had carious teeth and 7.4 per cent had periodontosis. Of 348 persons from 41 to 50 years old, 46.0 per cent had carious teeth and 15.3 per cent had periodontosis. Of 327 persons older than 50 years, 53.5 per cent had carious teeth and 25.3 per cent had periodontosis.

Mongolism and other congenital abnormalities: an epidemiological study in Northamptonshire

M. J. Pleydell. *Lancet* 272:1314-1319 June 29, 1957

The author noted that in Northamptonshire mongoloid children seemed to be born in groups in different areas at different times, the observation suggesting that mongolism and other congenital abnormalities may be more closely related to maternal infection than had hitherto been supposed.

An epidemiologic study in Northamptonshire of four types of malformation of unknown etiology—mongolism, congenital malformations of the heart, cleft lip and cleft palate, and major malformations of the central nervous system—is reported.

The incidence of cleft lip and cleft palate was found to be 1 in 635 live and still births, which is comparable with previous assessments. The highest incidence was in 1950 (1 in 340 live and still births), and the lowest in 1947 (1 in 2,506). Thus it varied considerably from year to year. There was no unusual concentration of instances in urban areas.

In 73 out of 83 instances it was possible to ascertain that the mother had lived in the area from the time of conception throughout her pregnancy. The distribution of the births at times suggests an infectious process, though this tendency seems less than with the other abnormalities.

In Corby in 1955 and 1956, eight babies were born with cleft lip and cleft palate (that is, 1 in

170 live and still births), whereas in 1944 through 1954 only six instances were ascertained (that is, 1 in 689). The months of birth in 1955 were May, July and August; in 1956 four of the five patients were born in the last six weeks of the year. In November and December, 1956, 1 baby out of every 30 born in Corby had a cleft lip and cleft palate.

The over-all record of congenital abnormalities suggests that they are induced by some environmental factor, a factor which does not remain constant in any locality but is subject to variation. This environmental factor may be infection.

▼

Public health dentistry

The development of the health services in Czechoslovakia

R. Palec. *Rev.Czechoslov.Med.* 2:71-78 Jan.-March 1957

The increase in the activities of the public health services in Czechoslovakia, together with improvements in the standard of living, has promoted better health for the Czechoslovakian population.

The present mortality rate in this country is the lowest ever recorded, especially in infant mortality. In 1,000 children born alive the death rate was 117 (in Slovakia 150) in 1937, and only 37 (42) in 1954. In 1,000 new mothers, the death rate was 49 in 1937, and 0.7 in 1954.

There also has been a considerable decrease in the number of infectious diseases and in the mortality rate from these diseases. During the occupation of Czechoslovakia by the Germans (1939-1945), the incidence of infectious diseases more than doubled. Many of such diseases as typhoid fever are now virtually eliminated. In 1945, the death rate from diphtheria was 18.9 per 100,000 population; today it is below 1.

The present birth rate shows an increase of about 26 per cent when compared with the birth rate of 1937.

Compulsory social health insurance, which recently has been extended to about 90 per cent of the population, covers completely illness, accidents, disabilities, old age and provides for hospital, dental and medical care. In theory and practice, the Czechoslovakian public health system now offers treatment and prevention. The main emphasis, however, is placed on prevention.

Public health care in Czechoslovakia has become one of the major obligations of the national government. After the unification of all previously independent and private health insurance companies into a public health organization, and the passing of several health laws, the Czechoslovakian Ministry of Health, the Slovakian Board of Health, and the National Public Health Committees have taken over full responsibility for the state of health, the care and protection of the entire population. Many scientific, dental and medical research centers have been created since 1951.

Every year, the national government allocates increasing sums to the public health authorities. In 1956, an appropriation of 5,500,000,000 Czech crowns (1 Czech crown is about 14 American cents) was assigned for this purpose.

In 1937, with private dental and medical practice, more than 33 per cent of dentists and physicians, and more than 65 per cent of specialists, were concentrated in the country's capital, Prague. Another 31 per cent of dentists and physicians, and 25 per cent of specialists, resided in the two other major cities, Brno and Bratislavia. Today, at least four dentists and five physicians, and one medical or dental specialist, are available for each 1,000 patients, even in communities with a population below 20,000.

The laws regulating education and training of medical and dental students, assistants, nurses, technicians and laboratory workers are designed to increase their professional level, degree, character and quality. Postgraduate courses for dentists and physicians, and subsequent training to qualify them as specialists or academicians, are provided by the national government.

In 1937, there were only three universities with medical faculties, and only one with a dental faculty, in Czechoslovakia. Today there are seven such universities and two dental colleges. Nurses, assistants, hygienists, laboratory and dental technicians are trained in 82 professional high schools.

Medical and dental research is carried out at

these universities and colleges, the Academy of Science, and the Institutes for Biology, Psychology, Physiology, Bacteriology and Virology. The Ministry of Health maintains 30 research institutes.

An important part in the development of medical and dental sciences, and in the improvement of public health, is played by the medical and dental state associations which maintain various specialized councils and departments.

At present, the public health authorities are especially engaged in the following activities: (1) medical and dental hygiene; (2) maternal and child welfare; (3) health education; (4) preventive medical and dental procedures, and (5) epidemiologic research.

In 1953, the Czechoslovakian Research Institute was founded in Prague. The past three years have shown that this institute has contributed much to the present favorable health condition in Czechoslovakia.

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Dental survey of Philadelphia preschool children by income, age and treatment status

J. M. Wisan, Martha Lavell and F. Herbert Colwell. *J.A.D.A.* 55:1-10 July 1957

To obtain data to help Philadelphia community agencies develop an effective citywide dental program for preschool children, a dental survey of 2,677 selected children was conducted. Children two to five years old were examined in private dental offices, in kindergartens, housing projects, day nurseries, health department clinics, dental school clinics and hospital clinics.

The study seems to show that dental decay is widespread in preschool children, particularly at the lower income levels, and that decay begins early and increases rapidly. In addition, the amount of dental care received by children even in the higher income levels is inadequate.

Twenty per cent of the two-year-olds and 52 per cent of the three-year-olds were in need of treatment. By age five only 26 per cent of the children studied had experienced no dental decay. Of the 2,677 preschool children, 60.9 per cent required treatment.

The enormous backlog of dental defects in this age group reaffirms the necessity of optimal water fluoridation as a community preventive measure. Where water is not fluoridated and where the public water supply has only recently been fluoridated, as in Philadelphia, fluoride should be applied topically after all the deciduous teeth have erupted. The data emphasize the importance of dental supervision and care before the third birthday.

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▼ Nutrition

Acid production from different carbohydrate foods in plaque and saliva

T. G. Ludwig and B. G. Bibby. *J.D.Res.* 36:56-60 Feb. 1957

Five human subjects with dental plaques which produced low pH values were selected, in a study of acid formation in the dental plaque after consumption of seven solid and three liquid carbohydrate foods. On successive mornings, each person was tested with a fig sandwich cooky, toffee, bread and jam, ice cream, fried potatoes, apple, a cola beverage, grape soda and unsweetened canned orange juice. After the subject had eaten one of the test foods, 1 ml. samples of his saliva were collected at five minute intervals from the commencement of eating for the next half hour.

After the ingestion of most of the test foods, acid was produced in the plaque in relatively large amounts. When the subjects had eaten the higher acid-producing foods (fig sandwich cooky, toffee, and bread and jam), within ten minutes the pH of the plaques had fallen to between 5 and 5.5 for most subjects and remained low for the remainder of the half hour test period. Only a slight rise in the pH of the plaques occurred in the majority of the subjects after eating the fig sandwich cooky, but after toffee and bread and jam, the return of the pH to normal was quicker.

The solid foods, French fried potatoes and apple, and the semisolid food, ice cream, gave rise to little acid. When these foods were eaten, only a relatively slight fall in the pH occurred, so that after five to ten minutes pH readings in the vicinity of 6 were recorded for most subjects. Thereafter, the pH of the plaques rose steadily and usually reached normal levels in from 20 to 25 minutes.

Little acid was produced from the beverages.

The demonstration that there are considerable differences in acid formation in plaques after the consumption of different carbohydrate foods and beverages suggests that there might be parallel differences in the caries-producing capacities of these foods. This indicates that plaque measurements of the sort made could be used as a means of differentiating between the caries-producing potentialities of foods.

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Freedom from caries

H. R. Sullivan. *Austral.D.J.* 2:89-90
April 1957

Freedom from caries in two sisters, aged 15 and 13, appears to have been brought about by an early enforced abstinence from refined carbohydrate.

In this family there is a history of sensitivity to sugar which is exhibited in the form of a rash or hives. This sensitivity became obvious in both children and greatly affected their dietary regime. The younger daughter was especially affected, and soya bean flour, skim milk and added vitamins formed the basis of her diet. By the time the two children reached the age of six years they were able to tolerate fats and sugar in a restricted amount; since that time their diet has been gradually broadened. At no period, however, have they eaten an excess of cakes, pastries, jams, confectionery or soft drinks, but they have eaten white bread since the age of six years and have taken sugar cooked in foods, on porridge, in milk puddings and in homemade ice cream.

Occasionally the elder daughter develops a transient desire for sweet food and may eat a quantity of honey for a short period, whereas the younger daughter sometimes eats dates and raisins in greater quantities than usual. The main diet, however, consists of savory rather than sweet substances, although no parental restrictions are placed on the children's choice of foods. Neither sister has paid great attention to oral hygiene.

The mouths of both children are free from caries. The elder sister has all teeth in good occlusion, except that the third molars are unerupted. The younger sister still retains her second diciduous molars. Two lactobacillus counts carried out for the older sister gave figures of 10,850 and 38,000 lactobacilli per milliliter of saliva. The younger sister's counts were zero on one occasion and 27 lactobacilli per milliliter of saliva on another.

The absence of caries in the mouths of these children would appear to be linked strongly with the initial avoidance of sugar. There is no history of freedom from caries in the family group, and therefore a genetic factor is not indicated as a dominant component of their immunity. Their mother is not fond of sweet foods and the possibility exists that she had a fairly low carbohydrate prenatal diet which might have had a beneficial influence on enamel formation.

The children now enjoy a reasonable intake of refined carbohydrate without any apparent detrimental effect on the teeth. The two girls have developed a liking for savory foods, and they indulge only occasionally in refined carbohydrates, and then mainly at meal times.

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Doctoral and Masters' dissertations

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In this column each month are listed recent Doctoral and Masters' dissertations of dental interest, accepted by the dental schools or graduate schools in partial fulfillment for advanced degrees. Copies of many of these theses are available from the schools through interlibrary loan.

Effect of the administration of steroid hormones on the gingival tissues. *Samuel Krohn. 1957.* M.S. *University of Michigan.*

Innervation of the human periodontal membrane and gingiva. *William D. Kirstine. 1957.* M.S. *University of Michigan.*

Mandibular condylectomy for temporomandibular joint ankylosis. *Alva E. Swanson. 1955.* M.S. *University of Michigan.*

Mandibular movement in children as revealed by the use of rapid serial cephalograms. *Milton Superstine. 1957.* M.S. *University of Michigan.*

Nature of the innervation of the human tooth. *Robert A. Rector. 1957.* M.S. *University of Michigan.*

Compatibility of the oral mucous membrane with silicones: the applicability of synthetic materials in dentistry (Zur Schleimhautverträglichkeit von Silikonen: Als Beitrag zur Verwendung von Kunststoffen in der Zahnheilkunde). *Robert Licht. 1955.* DR.MED.DENT. *University of Cologne, Germany.*

Tissue reactions to acrylic implants: implantation of self-curing methyl methacrylates (Über die Gewebereaktion bei Kunststoffimplantaten: insbesondere bei Implantation eines Autopolymerisates). *Eduard Büssing. 1956.* DR.MED.DENT. *Medical Academy of Düsseldorf, Germany.*

Course of inflammatory swellings in the maxillofacial region and treatment with conservative procedures (Verlauf und Behandlung entzündlicher Schwellungen im Gesichts-Kiefer-Bereich durch konservative Massnahmen). *Wilhelm Osing. 1956.* DR.MED.DENT. *Medical Academy of Düsseldorf, Germany.*

Socialized dentistry in West European countries (Die sozialen Verhältnisse in der Zahnheilkunde Westeuropas). *G. G. J. Samson. 1956.* DR.MED.DENT. *Medical Academy of Düsseldorf, Germany.*

Comparative examinations between "Spenglersan D" and "Novoprotin": the diagnosis of dental focal infection (Vergleichende Untersuchungen zwischen "Spenglersan D" und "Novoprotin": ein Beitrag zur Diagnostik dentogener Fokalinfektion). *Gerhard Teuscher. 1955.* DR.MED.DENT. *University of Halle/Saale, Germany.*

Paper chromatographic examinations of reducible substances in dentin calcoglobulin of pig's teeth (Papierchromatographische Untersuchungen über den Gehalt an reduzierenden Substancen im Dentinliquor von Schweinezähnen). *Arnold Heinrich Fulfs. 1955.* DR.MED.DENT. *University of Kiel, Germany.*

The fundamental principles of the "Impulsator" treatment (Das Wesen der "Impulsator" Behandlung). *Johannes Hauptmann. 1955.* DR.MED.DENT. *University of Kiel, Germany.*

Tubercular changes in dental granulomas occurring in tuberculosis (Zur Frage tuberkulöser Veränderungen in Zahngranulomen bei Tuberkulosekranken). *Horst Wesendahl. 1955.* DR.MED.DENT. *University of Kiel, Germany.*

Experimental investigations of linear and thermal expansion in self-curing acrylic resins, influencing the cementum, enamel, dentin and bones (Experimentelle Untersuchungen über die lineare, thermische Expansion schnellhärtender Kunststoffe, Zemente, Schmelz, Dentin und Knochen). *Günter Wulff. 1955.* DR.MED.DENT. *University of Kiel, Germany.*

Stability of acrylic resins used as dental materials and its relation to proper processing (Über die Festigkeit zahnärztlicher Kunststoffe in Abhängigkeit von der Verarbeitung). *Georg Janke. 1956.* DR.MED.DENT. *University of Marburg/Lahn, Germany.*

Use of "Hostacain Special" in dental practice (Erfahrungen in der zahnärztlichen Praxis mit "Hostacain Special"). *Hans Link. 1956.* DR.MED.DENT. *University of Marburg/Lahn, Germany.*

Structural changes occurring in gold alloys during casting and homogenizing processes (Die Gefüge-Veränderungen beim Giessen und Homogenisieren von Dental-Gold-Legierungen). *Ernst Adam. 1954.* DR.MED.DENT. *University of Marburg/Lahn, Germany.*

Alterations occurring in acrylic dentures during construction (Untersuchungen über Formveränderungen an Kunststoffprothesen während des Herstellungsprozesses). *Günter Ast. 1954.* DR.MED.DENT. *University of Marburg/Lahn, Germany.*

Tooth conditions observed in the "Svaerdborg man": a critical review of Arnborg's report (Odontologische Befunde am "Svaerdborg-Individuum": Zugleich eine Kritik an den Feststellungen von Arnborg). *Valdemar Berlin. 1954.* DR.MED.DENT. *University of Marburg/Lahn, Germany.*

Recently introduced methods of sterilization (Neuzeitliche Sterilisationsmethoden). *Gertrud Bossheimer-Böttcher. 1954.* DR.MED.DENT. *University of Marburg/Lahn, Germany.*

History and development of acrylic resins in German dentistry (Geschichte und Entwicklung der dentalen Kunststoffe in Deutschland). *Helmut Herrmannsdörfer. 1954.* DR.MED.DENT. *University of Munich, Germany.*

Copper amalgam as material for fillings, with special consideration of "Ku-Am 63," which is low in mercury (Kupferamalgam als Füllungsmaterial: Unter besonderer Berücksichtigung des quecksilberarmen "Ku-Am 63"). *Otto Hintermayr. 1954.* DR.MED.DENT. *University of Munich, Germany.*

The local blood count in diseases of the pulp: the blood count in trepanations (Das lokale Blutbild bei Pulpitiden: Trepanationsblutbild). *Hans Joachim Hütter. 1954.* DR.MED.DENT. *University of Münster, Germany.*

The problem of genetic transmission in uniovular and binovular twins in the field of dentistry (Ein Beitrag zur vererbungs-biologischen Zwillingsforschung auf dem Gebiete der Zahnheilkunde an Fällen ein- und zweieiiger Zwillinge). *Margret Schmidt. 1955.* DR.MED.DENT. *University of Tübingen, Germany.*

Skull and jaw fractures and their primary treatment (Schädel-Kieferbrüche und ihre primäre Versorgung). *Otto Schoor. 1954.* DR.MED.DENT. *University of Rostock, Germany.*

Examinations of the solubility of fluorhydroxyapatite (Untersuchungen über die Löslichkeit von Fluorhydroxylapatit). *Wilhelm Brenner. 1954.* DR.MED.DENT. *University of Tübingen, Germany.*

Disturbances in the homogeneity of "Palodon," and preventive measures (Homogenitätsstörungen des "Palodons," und Wege zu ihrer Vermeidung). *Bernd Holzhausen. 1955.* DR.MED.DENT. *Free University of Berlin, Germany.*

Determination of the oral flora with Giemsa's staining method (Über die Darstellung der Mundhöhlen- und Zahnfleischflora mittels der Giemsa-Färbung). *Käthe Irgang. 1955.* DR.MED.DENT. *Free University of Berlin, Germany.*

The prevention of postoperative infections after surgical treatment of fractures by medication with penicillin and other antibiotics (Die Verhütung der Wundinfektion nach operativen Frakturbehandlungen durch Penicillin und andere Antibiotika). *Karl Ernst Philipp. 1955.* DR.MED.DENT. *University of Bonn, Germany.*

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